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PUBLICATIONS LIMITED

JANUARY 1, 1913

PULP AND PAPER MAGAZINE OF CANADA

Vol. XI. Toronto and Montreal No. 1

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BUTTERFLY VALVES

AND ALL AUXILIARY APPARATUS FOR COMPLETE

Hydraulic Turbine Plants



Butterfly Valve 8 feet diameter, part of the hydraulic plant built for Price Brothers' new mill described on another page.

These Butterfly Valves have suspended ball bearings and are easily operated as the disc is practically in balance. They are thoroughly tested in the shop to ensure a close fit.

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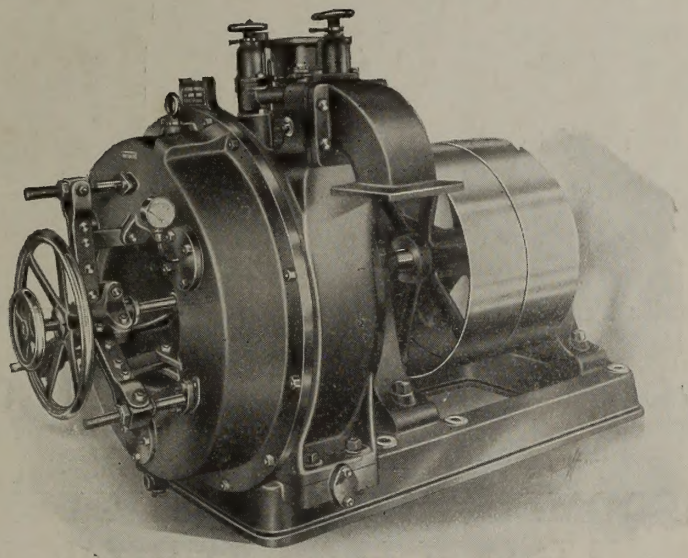
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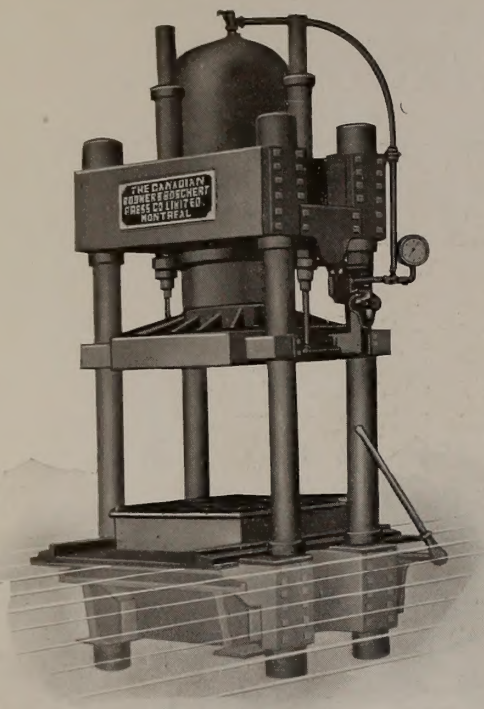
Capacity of Machine: From 8 to 10 tons of Screenings a day.

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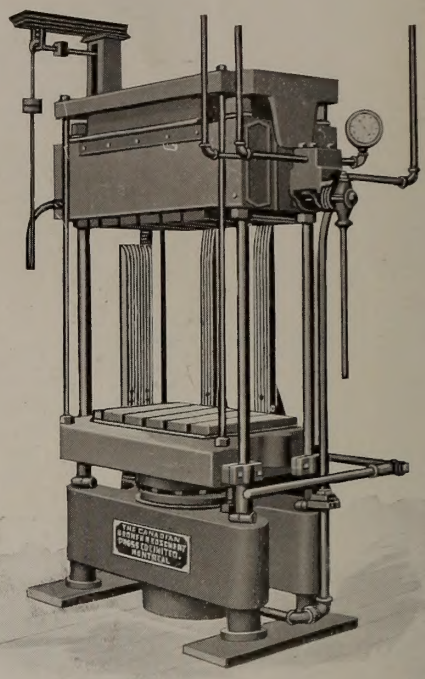
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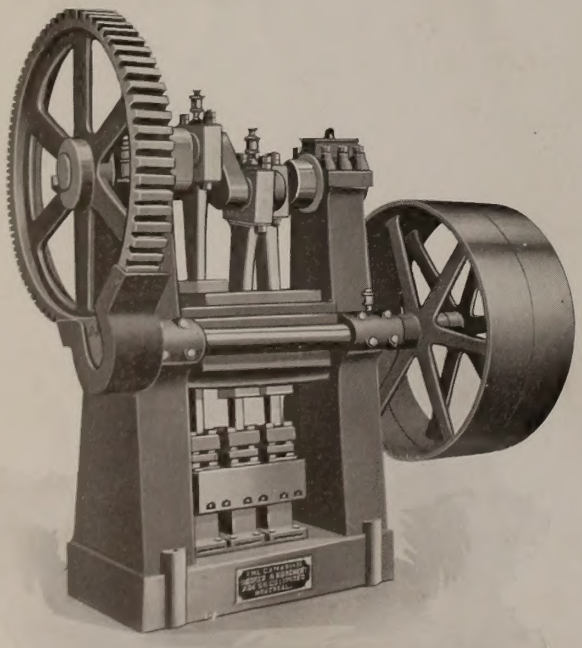
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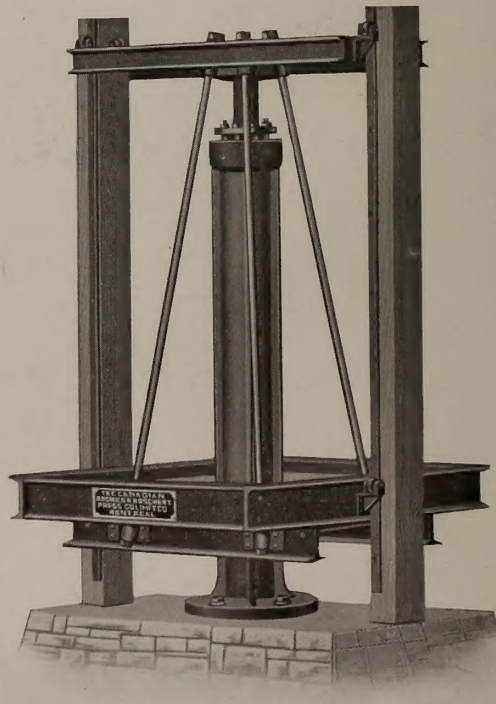
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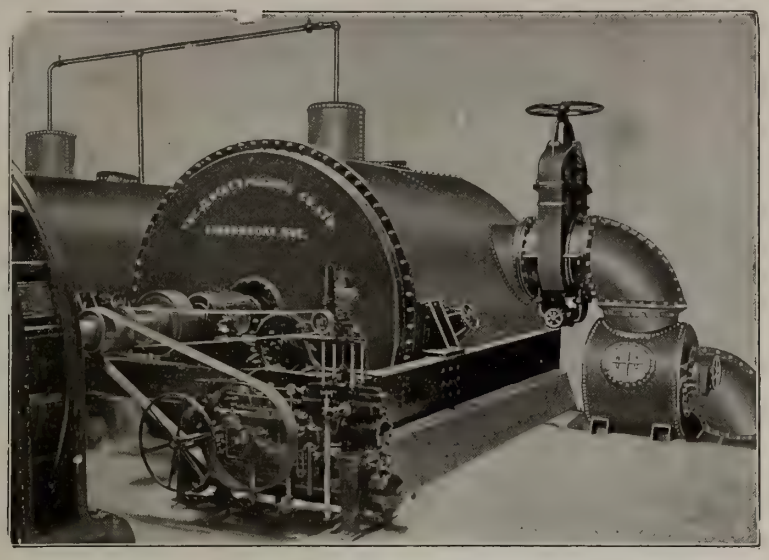
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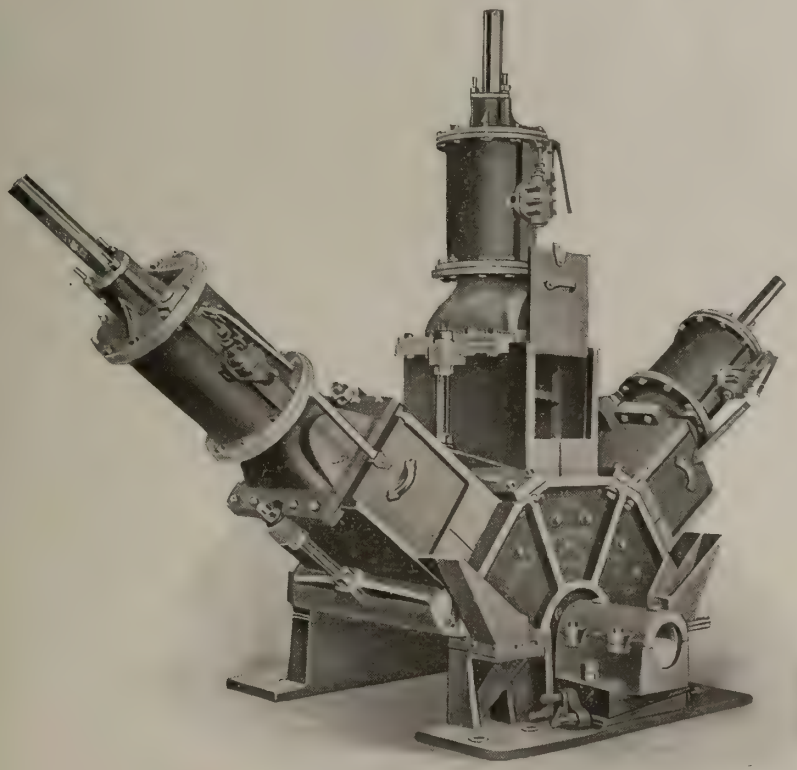


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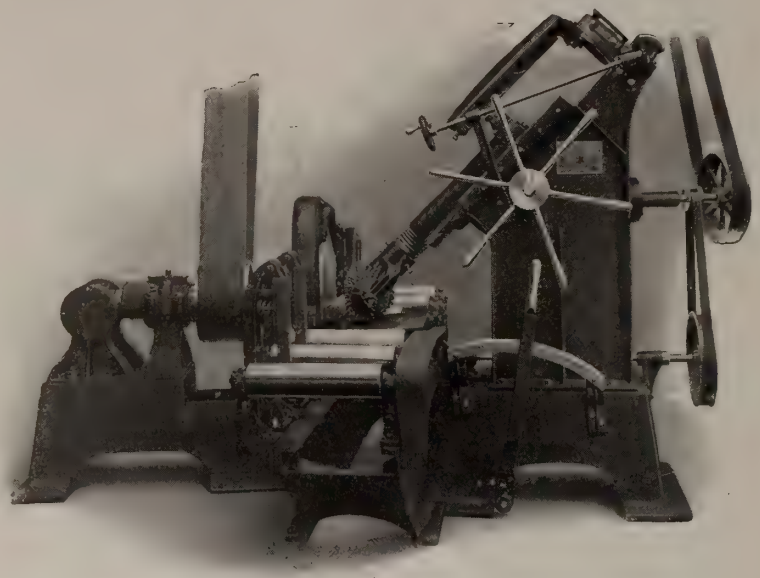
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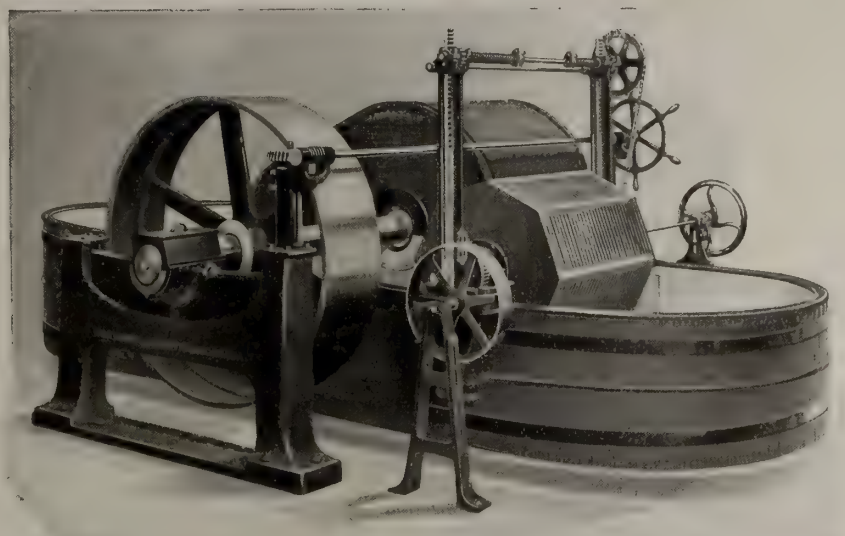
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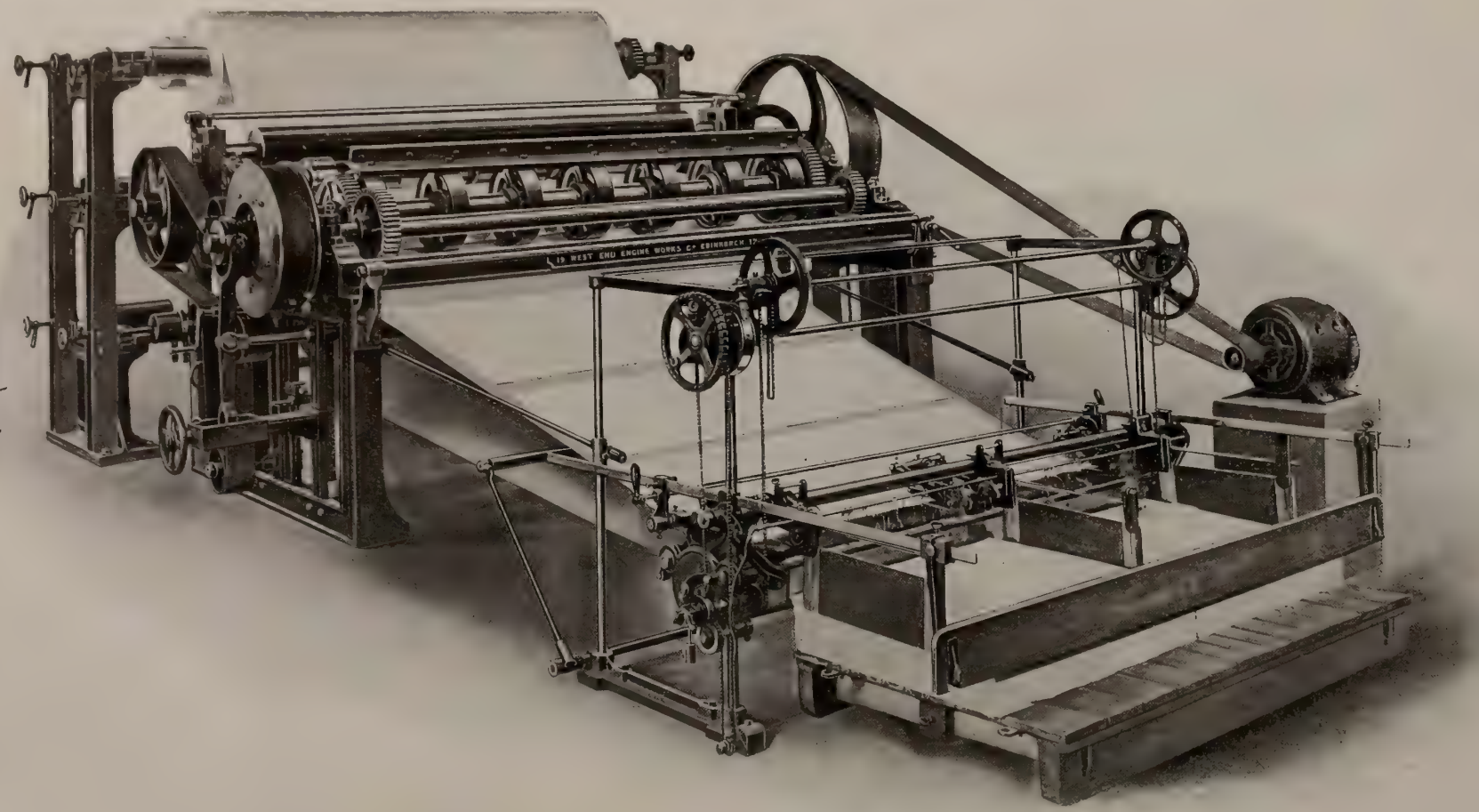
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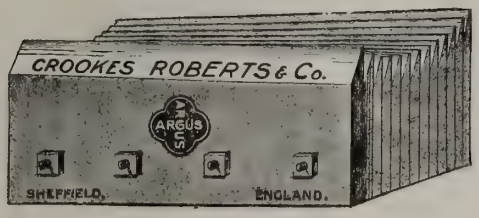
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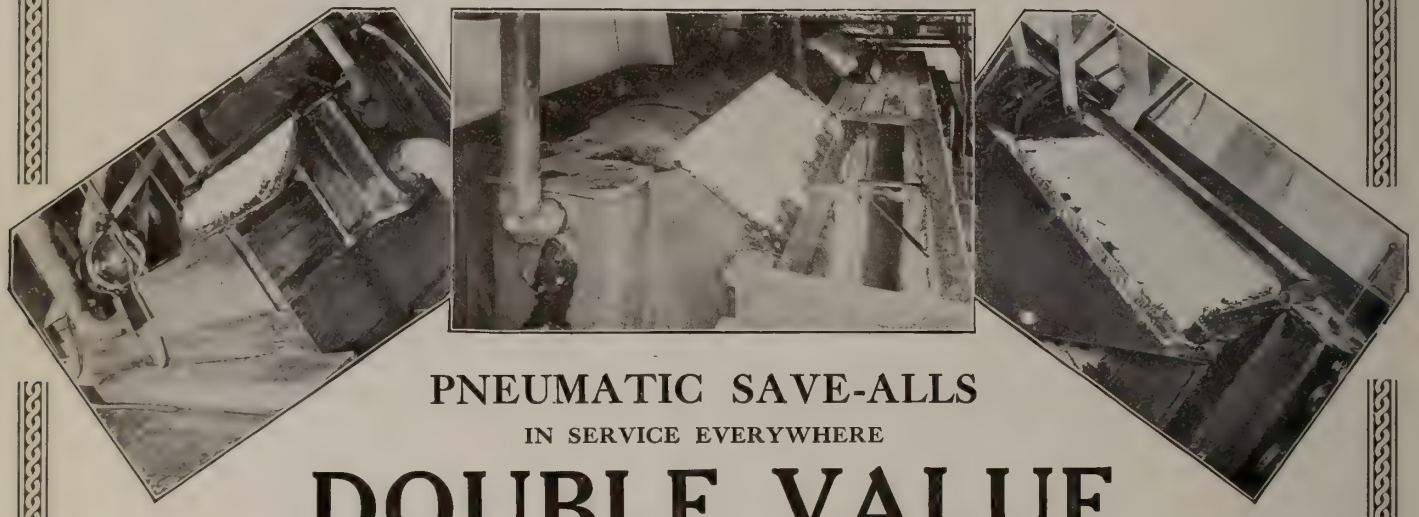
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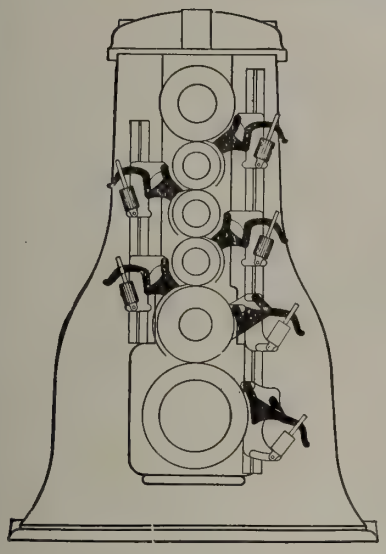
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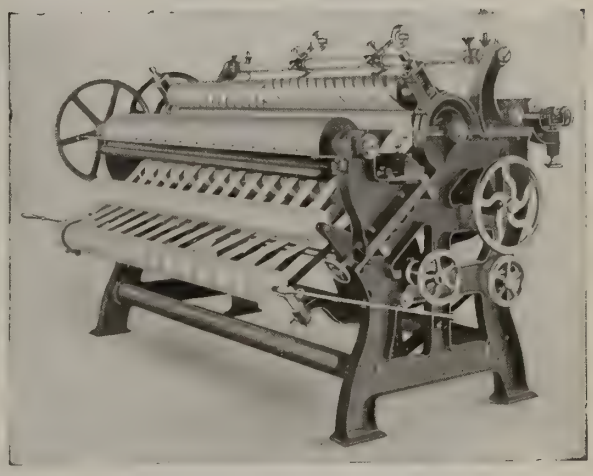
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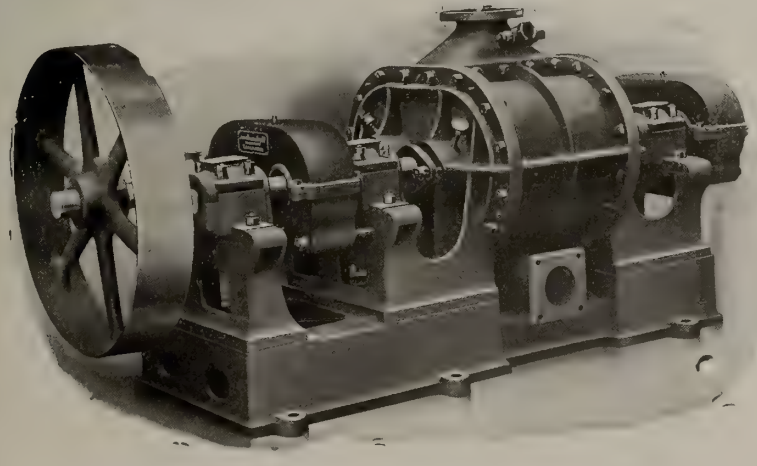
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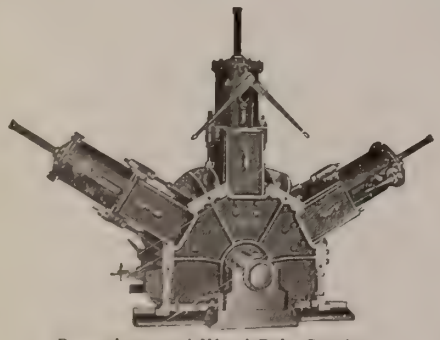
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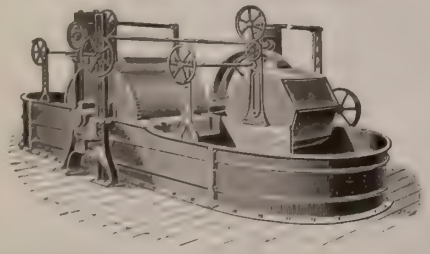
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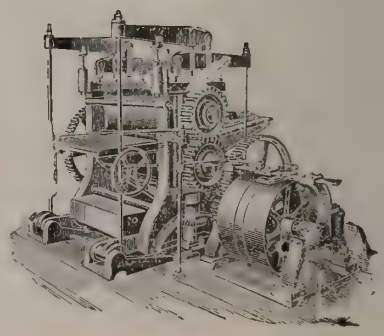
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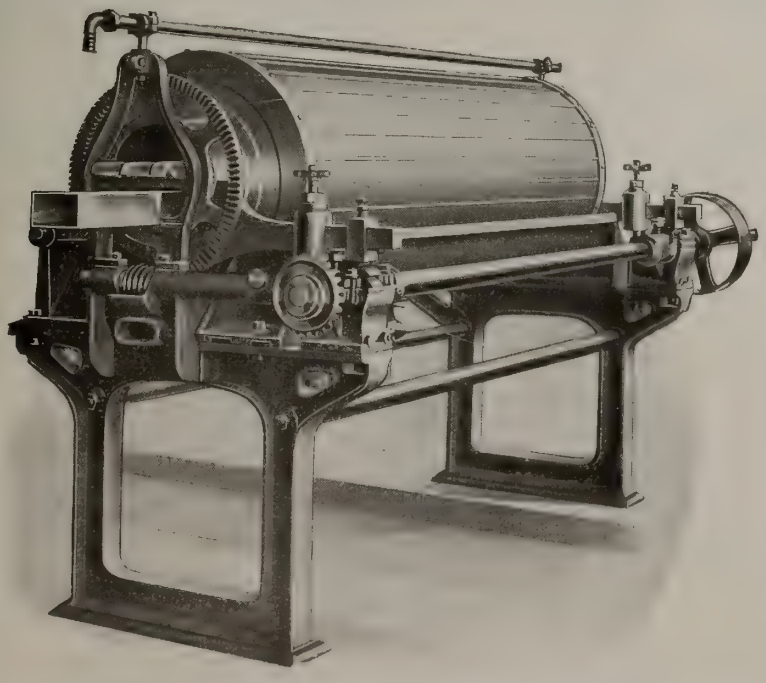
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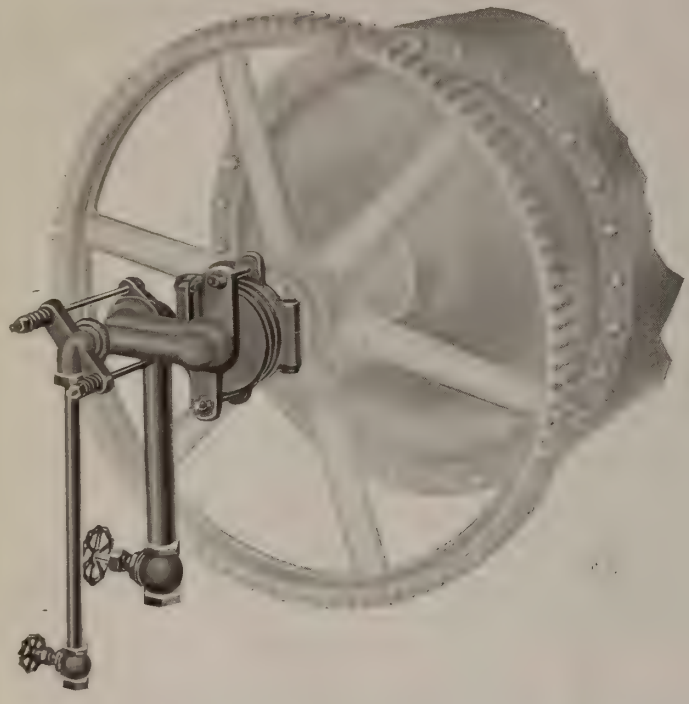
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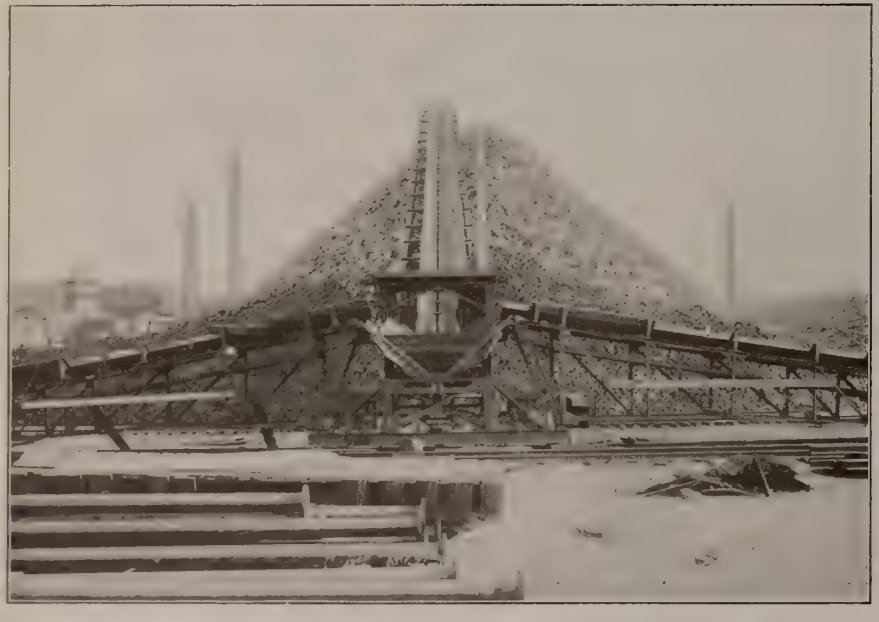
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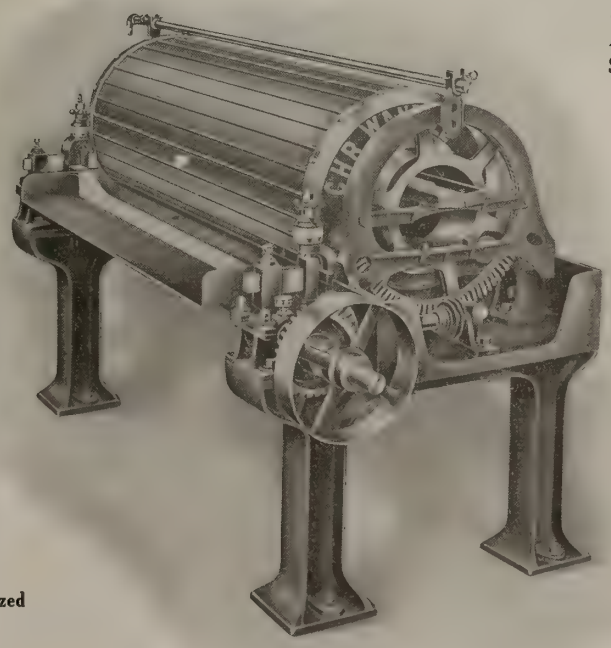
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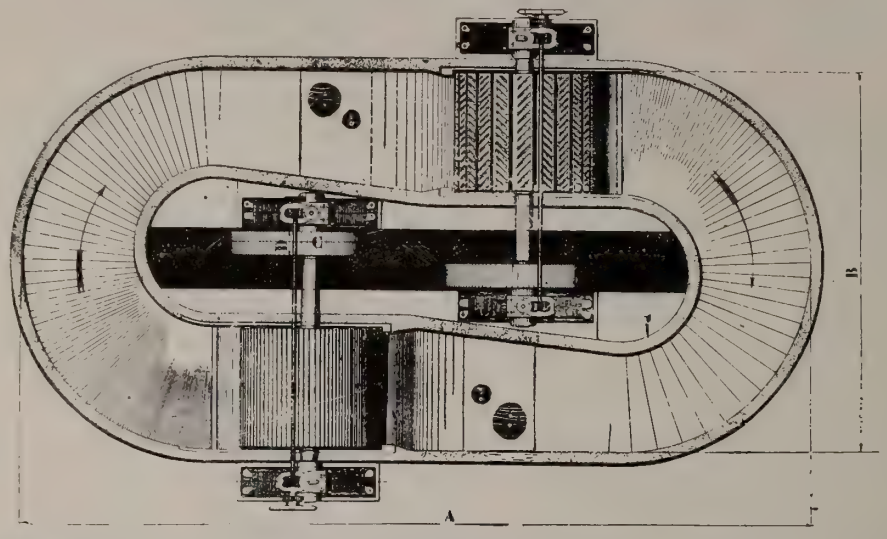
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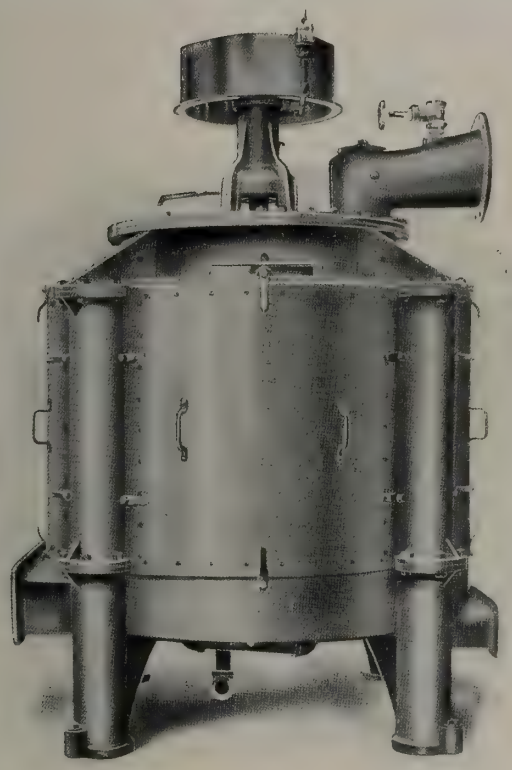
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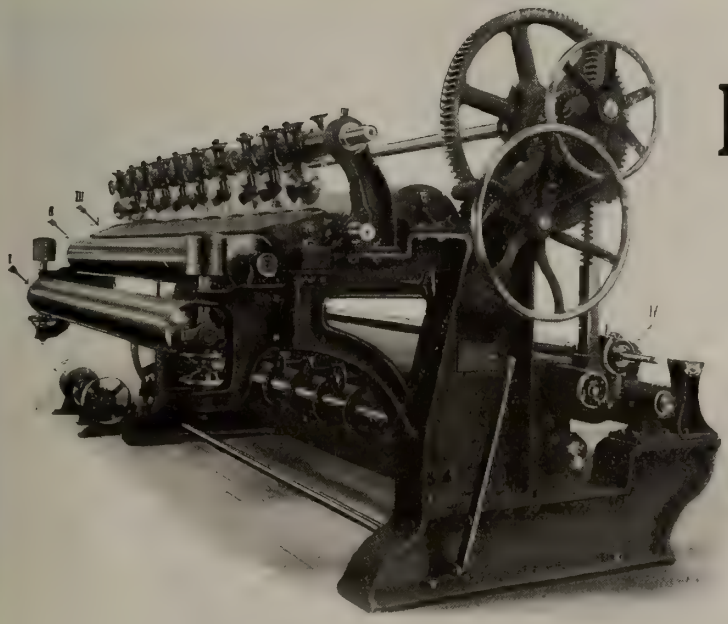
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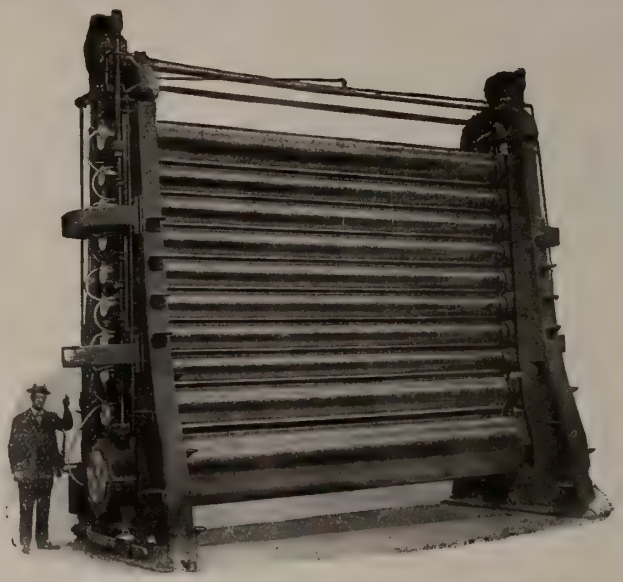
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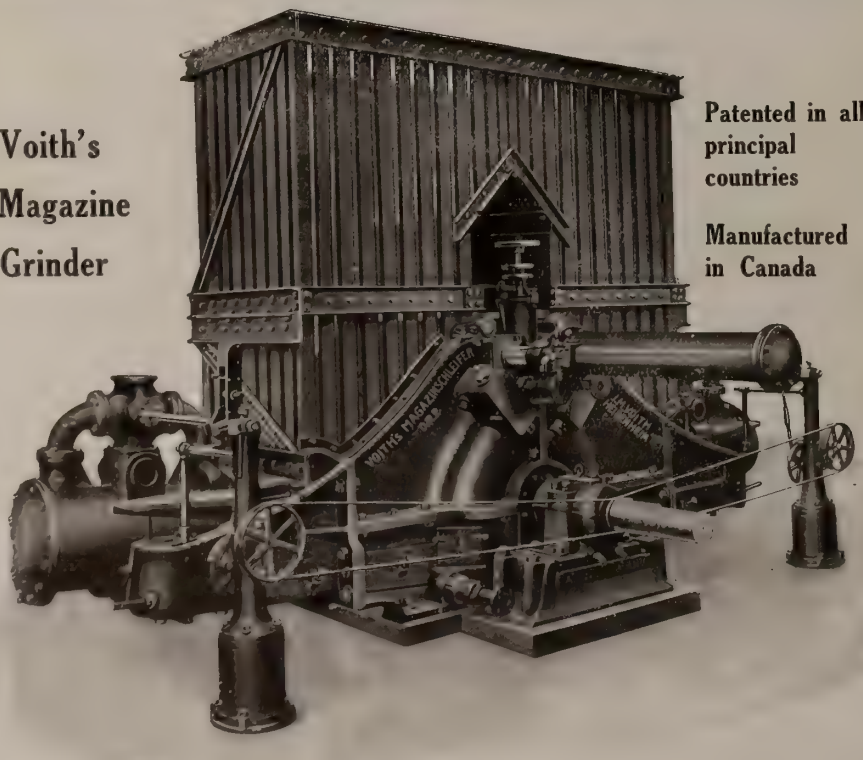
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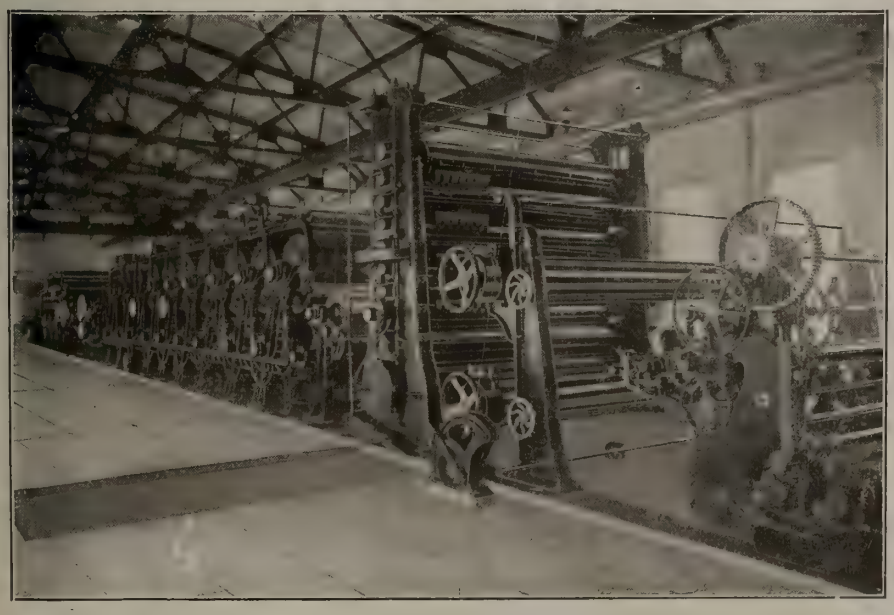
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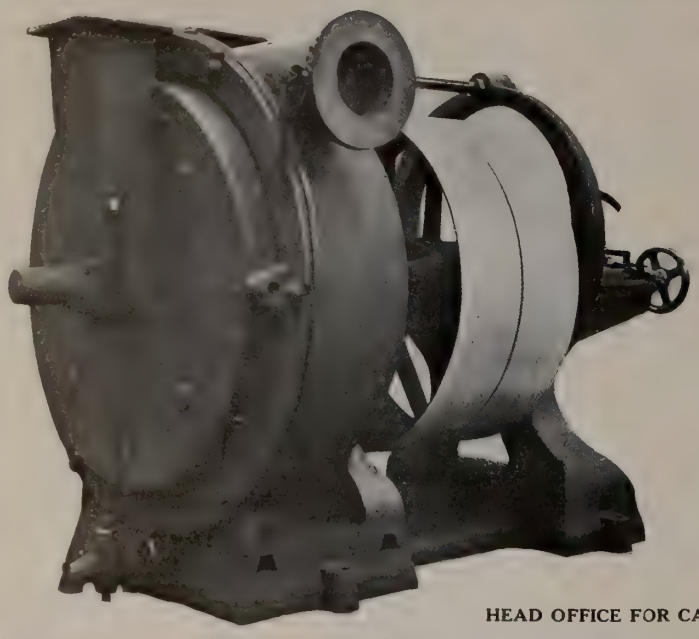
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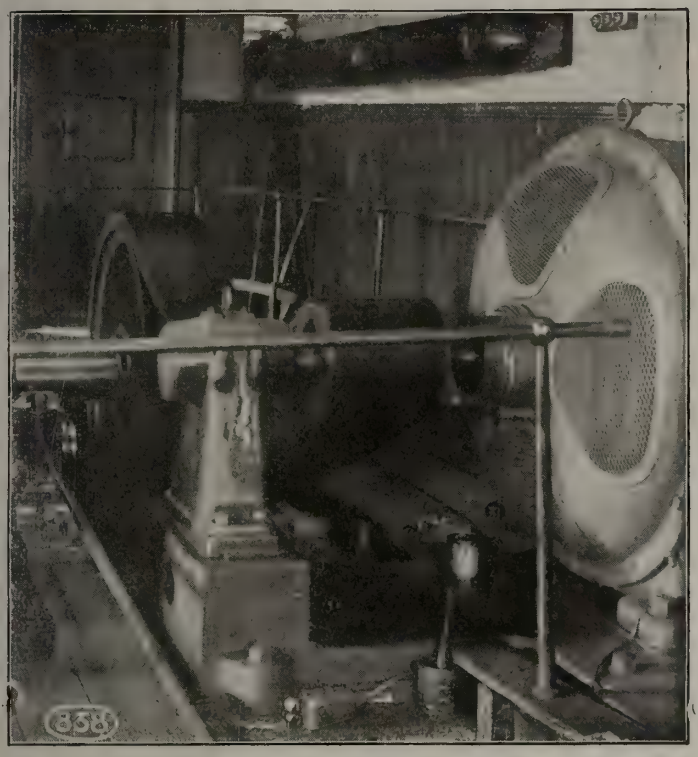
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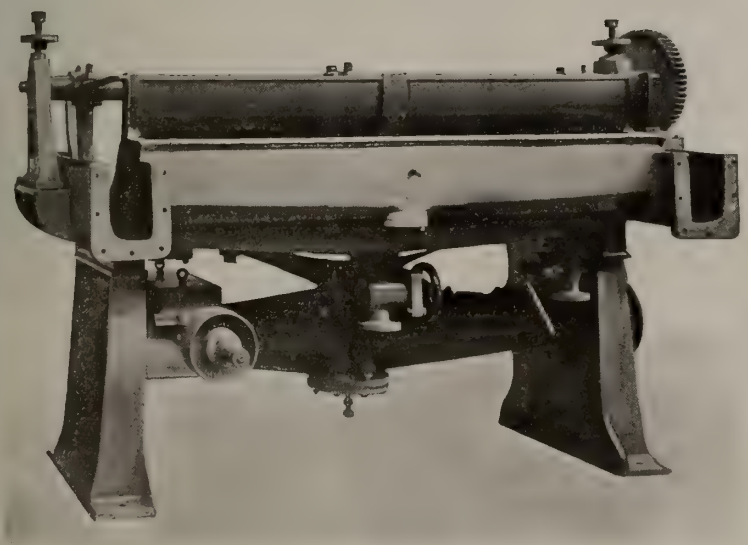
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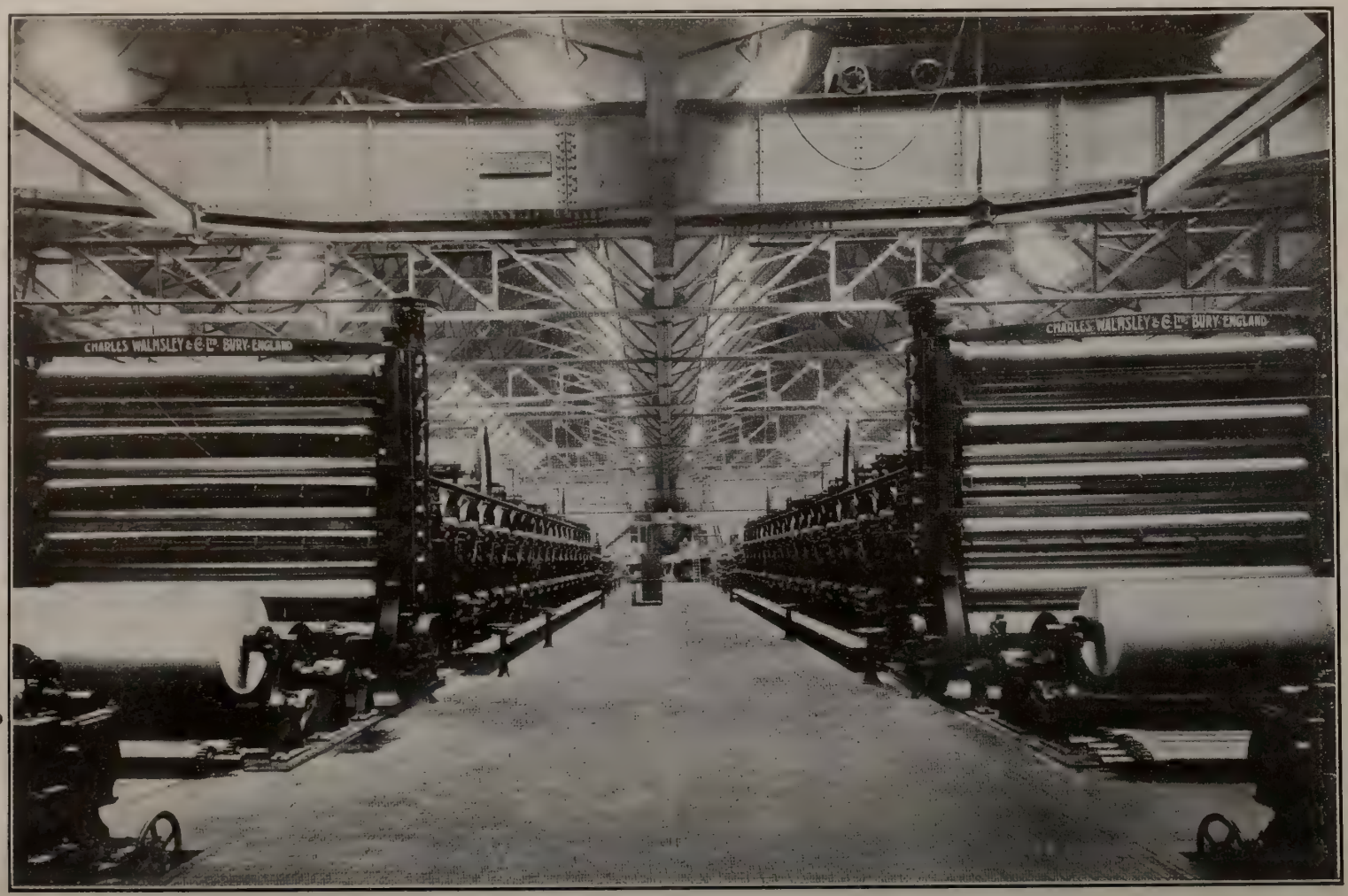
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Pulp and Paper Magazine

OF CANADA

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

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THE YEAR AMONG THE MILLS

We now look on pulp and paper as one of Canada's largest natural industries, and expect our country soon to attract world-wide attention as the wood pulp country of the world. It afforded the editor untold pleasure in visiting the Canadian mills during the past two months, to note the strong tone of optimism for the future, and to find everyone connected with the industry, in all capacities, planning enlargements, improvements or new developments. It is this spirit which makes the industry so unique to-day.

It is a real pleasure then, to sketch the advances made, during the last twelve months, in this most progressive of Canadian manufacturing enterprises.

The Province of Quebec has, perhaps, on account of its oft-heralded natural reserves of power and raw material, been a leader, this, as in past years, the largest single development being the Price mill, described in an elaborate illustrated article, on other pages of this issue. Just ten miles from this new mill the Chicoutimi Pulp Company have remodeled their No. 2 ground wood mill, increasing their total capacity to 300 tons daily. The bulk of their output is manufactured under long term contracts with Lloyds. In the other direction at the head of the Saguenay River, the Scott interests, of Roberval, have interested French and American capital, and will soon commence construction of a news mill at the Grand Discharge. This scheme has been mooted for some time, but, until very recently, found difficulties in financing. Directly south on the north shore of the St. Lawrence, the East Canada Pulp and Paper Company has started manufacturing ground wood on partial capacity. It has suffered recently in the trouble with the Forget interests, and is now in liquidation. We are sure this is not the fault of the pulp industry, but simply emphasizes the fact that investments, even in such promising fields as Canadian pulp and paper, should be carefully investigated. Mr. Wm. Whyte, formerly manager, has recently left to join the Ogilvie and Hansen interests at Iroquois Falls, Ontario.

Coming up the St. Lawrence, we find our newest undertaking, the Donnacona Paper Co.—a company of American capital, chiefly interests of the Gould and St. Regis Paper Companies. Already work has started on the buildings and dam, and contracts have been let for penstock, to Walsh's Boiler Works, Holyoke, Mass.; for five 1,200 horse power water wheels to the S. Morgan Smith Co.

The mill site of sixty acres at Donnacona is on the C.N.R. and Jacques Cartier River, fifty miles from Quebec, and two and a half miles off the main line of the Transcontinental.

They will install a 160-inch machine, with basement drive; four lines of grinders, three each, and 1 generator. Wood will be brought in by rail and water from the limits on the Jacques Cartier River and Baie St. Paul. At present they have under option 200,000 miles of woodland which will augment their present 180,000 square mile holdings, 20,000 of which is freehold. Present plans do not include a sulphite mill, which will follow at the time a second machine is added, bringing production up to 100 tons of print.

In the St. Maurice Valley a strong stir has been felt all year in pulp and paper matters. At Three Rivers, the Wayagamack Company have come on the market with 50 tons of kraft. Mr. Helin, of Norway, as technical manager, has gathered around him a staff of his experienced countrymen, and hopes to make one of the best sheets in Canada. Already the company, through their energetic secretary, A. F. Cayford, better known in textile circles, has formed a ready market for their kraft, and hope to displace many grades of such lines as sulphite, bag and manilla.

At Shawinigan Falls, the Belgo-Canadian Company are continuing their policy of elaborate improvements under the efficient direction of Mr. Statler. Present work is confined to centralizing the beaters, changing the drives to one line shaft, adding another Babcock & Wilcox boiler, and new ash handling system. The ground wood mill is also under process of reconstruction, but sulphite, so often rumored in this connection, is at present shelved, till the plan gets on a more scientific basis. They are continuing to use sulphite from Grand Mere and Sweden.

Farther up the river, at Laurentide, more than even the usual activity is noticed. A new additional digester is nearing completion, and the extensions to buildings are still under way. The new ground wood screen room, of Quiller horizontals, is working well, and the scheme of having all the stock troughs open on top keeps the attendants on watch to prevent overflows and plugging. The small power recently purchased just above the mill is not to be developed, but is simply a safeguard against legal troubles with the former owners. During the year, the company have closed their Detroit office, finding Toronto more central for their business. Mr. Crooker, formerly of the sales department, Grand Mere, is in charge. Their head sales office has also been removed to Montreal, where Mr. J. A. H. Acer is in charge, with his large staff of assistants.

Still farther up, the Quebec and St. Maurice Industrial Company are busy getting their new kraft mill, which, by the way, is the largest sulphate mill in the world, on an economical basis. They have only been running two years, so are really in the construction period. Mr. Brown, the manager, is spending a lot of effort in making La Tuque a comfortable town for his men, and is succeeding, as is shown by the spirit of content and satisfaction, so evident.

Coming nearer to Montreal, we find Mr. Morrow at Valleyfield adding a third coating machine to the National Paper Co., while within a few miles at Beauharnois, the Howard Smith Paper Co., so favorably known as Montreal paper wholesalers, are using the building of the old Dominion Woolen Co. for a new plant, in high grade, loft-dried papers. Mr. H. C. Courtney, formerly of the Toronto Paper Co., as general superintendent, is busy installing the machinery.

In the opposite direction, marked activity is going on at the Rolland Paper Co., who are completely rebuilding their St. Adele Mill, recently purchased. One new 87-inch machine with 20 dryers is being added to bring the new production up to 25 tons of the highest qualities of loft dried, tub sized papers. The building is already completed, and installation of machinery has commenced. A hydraulic development of 1,500 h.p. with S. Morgan Smith water wheels, is now finished, and is augmented to 2,000 h.p. by a steam installation. Mr. Geo. F. Hardy, New York, is the engineer, Mr. Henri Rolland the assistant manager at St. Jerome, and Mr. Oliver Rolland the chemist. The new mill will be in operation during March, and promises to be kept busy in their special lines, which have earned a well-deserved popularity.

In the Ottawa Valley, the Riordon Pulp & Paper Co. have made most extensive enlargements to their sulphite mill at Hawkesbury, increasing the production from 90 to 135 tons. Unauthorized rumors have it that the other plant at Merritton will be completely remodeled as well. Their grade of high quality easy bleaching sulphite has been always in good demand, but in the continued activity of the market, promises to give them trouble to meet the needs of their long-standing customers. Mr. Stevenson, the general sales manager, spends little time looking for new business, but is anxiously awaiting their increased production, which will come on the market in the course of a couple of months.

In the centre of Ottawa itself, the E. B. Eddy Co. has under way the construction of a new ground wood mill. The old site is to be used entirely for power development, and will, with their new tail races and Allis-Chalmers-Bullock water wheels give a large increase in available power. Immediately adjoining the machine room on the northwest side a new concrete and steel ground wood mill has been erected, and work is progressing rapidly on the installation of grinders in four units of three each, direct connected to four 1,200 h.p. motors. This will then be one of the finest ground wood mills we have.

In the Booth mills, across the river, the board mill is receiving most attention. A third Marx double beater has been installed and is proving a thorough success. They make an improved grade of board, but low grade stock is also made available for new purposes. The paper mills have increased the speed of their machines during the year to between 550 and 600 feet. per minute, bringing up production materially.

In this vicinity, too, the Bronson Co., Ltd., are now operating their new three-grinder mill, making ground wood from spruce cut on their extensive limits in the upper Ottawa district.

The Beaver Co.'s new $60,000 plant at Beaverdale, near Hull, is soon to make their own board, which has formerly been made at Booth's. Mr. E. B. Stewart is local manager, and Geo. H. Mullen superintendent.

The Bishopric Wallboard Co. are also opening a $40,000 plant in Ottawa to manufacture their board as is made on the American side.

The James McLaren Co., with their mills in Buckingham, are extending the present ground wood mill by some 1,200 h.p. and will increase present production by over twenty tons.

Farther west, in the Province of Ontario, activity is, perhaps, a little less widespread, but no less striking. In the St. Catharines district the largest individual new tonnage will be the Ontario Paper Co., Mr. Warren Curtis, jr., president and manager, with an initial output of 100 tons, already under contract with the Chicago Tribune. Two 202-inch Pusey & Jones machines are now being installed, with one large mixing tank and one broke beater. Steam turbine drive will be used with cones and belts, and tighteners instead of clutches. Mr. Curtis' own design of grinder is being installed, with motor drive, the power being bought on very favorable terms, from the abundant local supply. A sulphite mill is not in the present programme, but will be added immediately, if the present market conditions prevail. The wood supply, previously announced in our columns, is being supplied under a two-year contract with Mr. Menier, the Chocolate King of Anticosti Island. He is at present doubling his fleet for supplying rossed wood to his St. Lawrence and Lake consumers.

An independent concern has recently been organized, to erect a sulphite mill in this district, which is proving exceptionally attractive, on account of the rate for power.

In Thorold, the St. Lawrence Paper Mills Co., Ltd., are trebling the capacity of the old Montrose Mill, by the addition of a new machine, which is now being installed. To supply this extra power they are just completing a handsome new power house adjoining the site of the Interlake Tissue Mills, which they also now control. This mill has already installed the new Bertram tissue machine and beaters, and will be on the market with paper very soon. Other paper mills in that district are sharing the usual prosperity, but the ground wood producers have felt the decline in the American market.

Jumping to the north we find the plant of the Spanish River Paper Mills, Ltd., one of Canada's most spectacular paper stocks. The ground wood mill of the old Espanola plant has been remodeled, and production increased. Two print machines are now running full capacity, and the buildings are completed for the two 112-inch remodeled machines purchased from the Kansas City Star. A magnificent new hotel graces the town and everything feels the stir of getting a big plant in operation. Sulphite is brought from the Sturgeon Falls plant, which is being completely rebuilt at large expense. Already one of the two paper machines is running on news and manilla, as well as half the sulphite mill. As yet ground wood is being brought from Espanola, but contracts are now let for new equipment for the ground wood plant. The wood handling system is demanding most attention just now. Mr. Slater, of whom we carry a sketch in this issue, is making his personality felt in paper circles. Mr. T. H. Watson, also so favorably known through his numerous paper connections, gives his main time, for the present, to these interests.

At the "Soo," Canada's handsomest paper mill has chalked up a record year in expansion. The old mill, now completely rebuilt, presents the finest example of compact design and is a most creditable piece of engineering. We announce with pleasure that through the courtesy of Mr. J. H. L. Jones, The Pulp and Paper Magazine will shortly carry an illustrated descriptive article of the new plant. At present two machines are turning out print, and shortly two new 184-inch machines will augment the tonnage.

The main points of interest in the plant are their wood handling, wood room, and new vacuum ash handling system. The Lake Superior Paper Company have become one of the major units of the Lake Superior Corporation, so widely known in steel and railroad circles.

In the western end of the Province, the Minnesota and Ontario Power Co. at International Falls, Fort Frances, are adding two paper machines in addition to the 15-grinder ground wood mill to obviate the difficulties with the Canadian and Ontario Governments over pumping the slush pulp across to the American side.

The Dryden Timber & Power Co. are delayed in opening their new 40-ton sulphate and kraft mill, owing to a recent fire in connection with the new power development, which caused a loss of $100,000.

Throughout the Middle West the year has recorded the initiation of the first paper enterprises. At Prince Albert, the new pulp and paper mill recently organized by H. G. Struchen, of Minneapolis, will commence construction at once. This vicinity offers exceptional opportunities heretofore unrealized. Power costs $20 and $25 per h.p. developed in the new $1,000,000 installation at La Colle Falls on the Saskatchewan River, and there is abundance of excellent timber. A straw board mill is also scheduled for Medicine Hat, Alta.

In the Pacific Province, these matters have taken on a new interest and are rapidly becoming extremely active. With the present plants handicapped as they have been by varied considerations, capital being chief, the stir has been delayed. A new sulphite mill for the Island of Vancouver and plans for the rebuilding of a number of the present mills give the industry renewed vigor. The eminent and instantaneous success of the Powell River Paper Company has contributed to this, more than anything. After many initial misfortunes this plant scored a win at once. The decision of the United States to allow paper made from their limits to enter free, has opened to them the remunerative Western market. So successful has this been that though only running a few months they have already

placed orders for two additional 204-inch machines, to augment the present four, and may order two more very soon. Their phenomenal success has been much commented on, and is attracting pulp and paper interests to investigate the possibilities of British Columbia. It is well known that the Sitka spruce makes superior fibre, but offers difficulties for ground wood manufacture which have been insurmountable in many cases.

In the Atlantic Provinces, development in this, as in other lines, has reflected the conservative character of industrial life there. Opportunities are in abundance and exploitation is gradually recognizing the latent possibilities. In the Canadian winter port, St. John, the Edward Partington Pulp & Paper Co. have increased the production of bleached sulphite from forty to sixty tons, under the superintendence of Mr. Jones, who recently joined them. They are planning extensive enlargements, in the line of pulp and paper, but as yet have not finally decided the specific lines the development will follow. The Mispec Mill, identified with Stetson-Cutler interests, but owned by the City of St. John, is undergoing modifications in ownership and will soon throw off the dormant state and renew active production again.

In the extreme north, the only large project is being designed for Sir Wm. Van Horne, by Hardy S. Ferguson, of New York. Sir William has succeeded in amalgamating the rival interests in and about the Grand Falls power, and will launch a large news mill there. Details of this are awaited with interest by the trade, who look for a second Laurentide on the St. John River. A hundred miles east of here the Bathurst Lumber Co., an American concern, with extensive lumbering operations on the Nepisiguit River, are projecting a mill for Big Falls, about thirty miles from Bathurst, immediately adjoining the new development of the Canada Iron Corporation. To this end they have increased their holdings by a large purchase recently in the Gaspe Peninsula. Their situation is most favorable with Bathurst Harbor, recently modernized by the Dominion Government, to ship from, and with a large organization already operating. A sulphite mill has also been planned for the Gaspe coast by other interests.

At Chatham the Dominion mills have slightly increased their output of sulphite, but are little changed as to operating conditions.

In the Peninsular Province of Nova Scotia, the only altered conditions during the year have been the rebuilding of the Campbell Mill at Weymouth, which was burned. They are now operating as before, with only minor changes.

In Labrador, extensive timber holdings have been cruised and investigated, and in Newfoundland, Mr. Hardy is now working on a third large news mill.

On the whole, the year's advances have been striking, bringing our country into world-wide prominence as a progressive, industrial nation, coveting the prizes in the markets of the world.

CANADA'S PULP WOOD RESOURCES

Canada to-day possesses the largest resources in the way of growing timber suitable for the manufacture of pulp of any country in the world. The continued opening up of great mileages of new railroad brings this ever more prominently before the eyes of the world. The result undoubtedly now is that this country holds the key to the future in the great pulp and paper industry. The neighboring republic recognizes this, as is indicated by its growing dependence on Canadian wood, by the fact that so many of its capitalists have become interested in pulp wood areas, and, indeed, in actual mill enterprises in this country, and by the strenuous efforts of its Government to gain easier access to our great undeveloped areas.

Notwithstanding these facts, however, he would be a bold man who would attempt to calculate in actual number of cords, or even in acreage, the extent of these resources. In fact, the more conservative of our public men, as well as men qualified to speak from the forestry standpoint, frown upon the pretence to give actual estimates. Too many estimates which have been made have been largely the result of guesswork. One difficulty consists in the fact that there is no sharp line of distinction between wood that can be used for pulp and wood that can be used for lumber, poles, ties and other purposes. But a still greater obstacle lies in the fact that there are enormous areas, particularly in the northern parts of the Dominion, which are either quite unexplored, or only partially explored to this day.

Perhaps some of the closest work along this line was in connection with the Ontario Government's survey and exploration work in Northern Ontario some years ago, when an attempt was made to find out as approximately as possible the pulp wood contents of each section covered by the survey parties.

Speaking of the territory north of the Height of Land, the report says:

"There is little pine timber, the trees being scattered and inferior in quality. Some small areas of red pine and some jack pine were met with, nearly all of these varieties found being south of Lake Abitibi. The best areas for pulp wood are on Low Bush and Circle Rivers, with their tributaries, where it is estimated that an area of 180 square miles will yield an average of seven cords to the acre or about 800,000 cords. Along Little Abitibi River, between Harris Lake and the boundary,

the pulp wood is estimated at 750,000 cords. A belt reaching from Lower Abitibi Lake along the Abitibi River to Long Sault, eighty miles in length, will average seven cords to the acre. There are also considerable pulp wood areas to the west and north of Lower Abitibi Lake. District No. 2 embraces fifty miles on each side of a base line run west from the 198th mile post on the boundary line between Nipissing and Algoma Districts to the Missinabie River, about 100 miles, and also the tract lying southerly along the Missinabie River up to near Missinabie Lake. Of the territory explored, 60 per cent. will yield on an average 5 cords of spruce wood to the acre, in addition to other timber. The prevailing timber is spruce and poplar, there being no pine or hard wood. The spruce, especially along the river banks, attains a size which renders it valuable for square timber, and the poplar is large and abundant, particularly on the Mattagami River. Special acres examined would yield 20 cords of spruce, other acres would cut 15 cords of spruce and ten of poplar. Some of these, if all the timber growing on them were made into cord wood, would show 60 to 70 cords to the acre."

Survey work along the proposed route of the Hudson Bay River indicates that there are large tracts of country containing a good percentage of wood adapted for pulp.

In Northern Quebec, it is safe to say that conditions are largely similar to those prevailing in the analagous parts of Ontario, with the comparison in favor of Quebec, as regards to area. Indeed, of all the Provinces, Quebec must take rank as the premier in regard not only to pulp wood production, but also to pulp wood still standing unutilized.

British Columbia, it is recognized, has millions of acres from which large quantities of wood can be cut, but it is also recognized that the number of cords is almost incalculable. The newly organized Forestry Department in that Province is busy making plans for comprerensive survey and chart work, and from the great energy with which they are starting out on their important work, great things may be expected. The tremendous difficulties in the way of having qualified men collecting reliable data in a country possessing such great natural obstacles as "a sea of mountains" and traversed by raging torrents are scarcely realized at their true value by the ordinary public. And the same thing applies to survey work in the northern wilderness of Quebec and Ontario.

Nova Scotia is not generally credited with being one of the great lumber and pulp wood Provinces, yet they form no mean asset. Dr. Fernow, who not long ago made a forest survey of that region, gives as his estimate an area of 5,500,000 acres under timber, with 24,000,000 cords as the probable output, divided up as follows: Mainland, 5,000,000 acres with 10,000,000 cords, and Cape Breton, 500,000 acres with 14,000,000 cords.

It should be remembered that the species of wood used principally for the manufacture of pulp are spruce, balsam, hemlock and poplar, and most estimates are confined to the quantities of these species still standing. It must not be forgotten, however, that there are other woods which can be used for pulp making purposes, as has been demonstrated by the work of the laboratory at Wausau, Wis. Jack pine, for instance, while presenting considerable difficulties in working up, has proven its usefulness for this purpose when proper precautions are taken. Many sections of Canada contain vast quantities of this tree which some day in the future will no doubt be utilized.

New Brunswick contains large areas rich in pulp wood trees, but so far as we have seen, no one has been daring enough to estimate the probable quantity of cords, section by section,

In Alberta and Saskatchewan, the Crown lands are retained under the jurisdiction of the Dominion Government. While not, strictly speaking, rich in timber or pulp wood resources, the aggregate quantity available in the future will doubtless reach a respectable figure. Manitoba, Crown lands in which have been under similar conditions, did not possess any notable pulp wood areas until its recent enlargement of area, but now that its boundaries have been stretched to Hudson Bay, it does contain a certain proportion of forest land.

J. R. Dickson, of the Dominion Forestry Service, who inspected the proposed route of the Hudson Bay Railway from The Pas to the Split Lake, a distance of about 235 miles, reported that there were fine species of timber of commercial value, namely spruce, poplar, tamarack, birch and jack-pine. The trees are short, but would be suitable for pulpwood. Much of the wood was too young for present cutting, though in the absence of fires for twenty years the stands of 4 to 8-inch timber could then be cut profitably for this purpose. Mr. Dickson adds significantly, "it is probable that within the next quarter of a century part of the enormous energy now running free in the falls and rapids of Nelson and Grass Rivers will be harnessed to drive pulp and paper mills.

Roughly summarizing all the data furnished by the Dominion Forestry Department and the forest authorities of the various Provinces, and under a due consideration of the difficulties in the way of an approximate calculation of the stand of pulp wood timber throughout the Dominion, we would say that its pulp wood resources would approximate two billion cords on about 265,000,000 acres of land, made up as follows:

	Acres.	Cords.
Nova Scotia	5,000,000	24,000,000
New Brunswick	20,000,000	100,000,000
Quebec	60,000,000	600,000,000
Ontario	40,000,000	400,000,000
British Columbia	40,000,000	450,000,000
Dominion lands	100,000,000	450,000,000
	265,000,000	2,024,000,000

Experience may show that this estimate may be exceeded or it may be beyond the mark, but it is looked upon as conservative by those who have had the best opportunities for judging. In any case, it is far away

and beyond the possessions of any other country in the world, and when the economic end of the pulp and paper industry is even better understood than it is to-day, it will surely mean the bringing forward of the Dominion of Canada to the position of premier pulp and paper manufacturer in the world.

TECHNICAL EDUCATION IN THE PAPER MILL

European visitors to American pulp and paper mills sometimes put their criticism into some such sentence as this: "Your mills seem to be equipped for large output and quick delivery rather than for quality." Now, while exception might be taken to this criticism in several cases, it is, on the whole, well founded. There is reason for this in the large demand for magazine and cheap book papers. Does this condition preclude attention to technical detail? It is claimed that it does, on the ground of increased overhead charges.

There are two classes of mill to be considered. The entirely new mill with up-to-date machinery and construction, and the old mill with new parts connected to old and nearly obsolete units—new patches in old garments.

Mill owners of the first class are prone to place too much confidence in machinery, while the second-class believe that they cannot compete in quality with the large new mills because they have not the facilities.

The great difficulty is that from the executive down, there is an idea that theory and practice are incompatible—both from the viewpoint of practicability and money value.

This state of affairs clearly shows that there is something wrong, there is the need for technical education in the executive staff. This need has been largely met in Europe in nearly all branches of industry. It is being met in America in the case of some industries. With its immense capital outlay, its army of workers and its consumption of vital natural resources, there has been no effort made to put the training of American pulp and paper makers on a proper educational basis. The first steps are being taken now in the United States to meet this state of affairs. So far nothing has been done in Canada, though Mr. T. Linsey, a well-known pulp and paper chemist, of Montreal, brought this matter to the attention of the Royal Commission on Technical Education, and they will, no doubt, deal with it in their report.

As he says, in a communication to The Pulp and Paper Magazine, many questions come to the mind of the technically trained man that do not appeal to one lacking such training. A trained man in the supply room would be able to save his employers much in the way of belts, oils, and machinery. In the purchasing department, a man with an intimate knowledge of paper technology would be able to buy with intelligence—not looking for lowest price, but best value.

A properly trained superintendent would not put a large stuff pump, literally the heart of his mill, down in a dark corner whereinto at the risk of his life an oiler climbs, down a shaky ladder as seldom as he may. Nobody knows anything of it until such times as the belt breaks or the casual bolt which may have fallen "from the blue" puts it and half the mill out of business for a couple of hours or more.

A properly trained manager would not support the moisture test on his pulp, by writing to a customer, who was extravagant enough to have a chemist, that his testing oven was never heated over 135 deg. F. for fear of overheating the pulp.

A properly trained managing director would not hold three boilers having a 125-lb. permit down to 90 lbs. to keep connection with an old boiler not permitted to carry more.

Measurement of solutions such as bleach are often taken as so many "inches" irrespective of their strength.

Pulp bleached by a man with some technical training would not take 15 per cent. to 20 per cent. instead of 9 per cent. to 12 per cent. of its weight of bleach.

Such instances may be multiplied indefinitely. Surely the pulp and paper makers of Canada cannot overlook the significance of such results.

When the writer has approached paper mill capitalists on this subject, he has been told that it was a question for the Government to provide for.

If the establishment of the Forest Products Laboratory, so ably advocated by H. R. MacMillan, recently, before the Canadian Forestry Association, and in these pages, were to be provided for, it would not be a great additional expense to equip such a laboratory for special work in paper technology.

Could not the pulp and paper interests of Canada appoint a committee to confer with the Canadian Forestry Association and see if some arrangement might not be made to put this suggestion into some concrete form. An industry that turns out as a finished product only about forty per cent. of its material, has surely some opening for investigation of its waste products. Sweden has a paying industrial alcohol business built on wood waste, but little is heard of such work being looked on as part of the outlay for any new mill in Canada.

The large quantity of flax straw wasted annually, constitutes a reproach to the paper industry which

therein loses an opening to independence of the variable rag market. The increasing use and higher price of linseed oil give this question increased importance.

In investigating the use of Talc mined in Canada as a paper filler, a great deal of prejudice that was found against it appeared to be based on improper approach to the technology of paper filling and the special handling of talc for such purposes.

These are only special instances. We may, of course, benefit from the work done in other countries, such as that of the Forest Products Laboratory at Madison, Wis., but there are points which the Canadian industry must work out for itself, which would surely be profitable both to labor and capital.

GRAPHS.

The value of graphic curves is so little realized among Canadian paper mills that we can say their use is almost unknown. Among the engineering profession they are freely used and generally appreciated to an extent usually depending on the stress laid on them during the engineer's college days. Many of our managers find it hard to realize the value of information in the form of curves, because it is at least a year before they become of any real value, and the longer in use the more useful they become. Information thus obtained is expensive, measured in dollars and cents, forgetting the results, but it is a better investment than the mill property itself measured in returns. The expense of gathering the information daily from the mill from readings of thermometers, pressure gauges, meters, production reports, time slips, and automatic recording instruments of every description does cost money. Then this must be averaged and daily plotted in the curve sheet. The writer knows of one 400-ton mill in the United States which keeps over three thousand curves, requiring six men to only do the plotting of the averaged results, and a lot more just averaging these readings, as turned in, on adding machines. The things found out about the operation of the mill, the opportunities for economy which present themselves are beyond belief of one unacquainted with their value. True, this cannot be appreciated by a man in any narrowing sphere of any one department, but must be read by one with the grasp of the working of the entire plant. The correlations which develop, the wastes staring one in the face, the gross discrepancies all must show up in a wonderful manner. Information in this form is not only condensed, but can be grasped by the eye much more quickly than any system of tabulated results, and can be filed in the most convenient manner.

Our readers are all familiar with water curves, but few have worked by even such general ones as production, efficiency, or power consumption, besides the innumerable possibilities in the more detailed operations. Let us urge the starting, of some curves, at least, in your plant, in the hope that soon the development will so commend itself as to necessitate the establishing of a special department for such work, and be not discouraged if results do not come within a year. The best in anything comes only with time.

THE CARDBOARD SITUATION.

During the past year, owing to the state of the American board market, it has been possible for our users of boxboard to buy on the other side and land the American product at their warehouses for a much better figure than our own mills quoted. The recent improvement of our competitor's markets has, however, changed this situation somewhat. This is only little appreciated by the trade in general and arises from a number of combinations of circumstances. Board, as is well known, is one of the best lines of paper manufacture, due to the fact that it utilizes much low-grade stock from the other departments of the paper mill; and also owing to the good demand for the production. The peculiar situation above referred to, has arisen chiefly, however, on account of the absence in this country of any board mills using waste papers and broke, for raw material. On the other side, though, we find in the large centres, such plants using the local waste papers, and it is mills of this class mainly which have been able to set down in our markets such grades as colors and chip board at such attractive prices that our box manufacturers have easily induced their customers to make the change. A peculiar case, for example, has arisen in colors which can be made from such waste. A box man charges, say, roughly, ten per cent. more for colored lined board, than wood board or folding. But he has been able to buy this colored on the other side closer than our own mills offered the white or gray, while they asked an advanced price for their colored boards.

The upshot of the whole thing is that there is in Canada at either of the centres of Montreal or Toronto, a need for a board mill using waste papers, to use this class of raw material, much of which at present goes over to our competitors.

We are a young country and have realized our vast pulp resources to the neglect of the utilization of the wastes we accumulate. The market for these grades is expanding rapidly enough to warrant such a scheme without trespassing on the fields of our present mills.

Patent coated, or white lined, and tag, have also been suffering recently in a similar manner in spite of the twenty-five per cent. duty. The delay in delivery, owing to the rush of our Canadian mills, has helped to cause this, as well as the general low markets in the United States. We are pleased, however, to see improvement in deliveries, and hope to see the mills on this side getting all the orders.

EDITORIAL COMMENT.

Special attention is drawn to the article in this issue by Mr. H. S. Ross, K.C., of Montreal, upon the Workmen's Compensation Act, Quebec. This is a subject upon which so many able minds are engaged throughout the world and which is of such outstanding interest to the industrial world, in both the employing and the employed sections, that Mr. Ross' contribution will be studied with more than usual eagerness by all. His references to what has been held in important cases in French and English jurisdiction, as well as to certain proceedings now going on in the Canadian courts, bring his remarks very much up-to-date. The time has evidently arrived for a carefully thought-out legislative policy in regard to this important matter for the Dominion.

Mr. John Norris' contribution to the discussion of the librarians' problem of how to preserve newspapers and other historical records for the information of future generations dwells upon several points of interest to the paper manufacturer. Included among these are his suggestions as to storage so as to avoid deterioration, not only in the store rooms of the newspaper publisher, but in the mill warehouse. Of course, one method of obtaining longer life to printed records would be to use better paper, but this costs money which the publisher usually does not want to give. Several other points are discussed in a very interesting fashion by Mr. Norris, but we will refer the reader to his article itself on another page.

The hearing in the case of the United States Government versus importers on the question whether pulp coming from countries having favored nation treaties with the United States shall enter that country on the same basis as that from Canada is fixed to take place on January 14th. The case will attract a great deal of interest, not so much from its pecuniary aspect to the importers, who have covered all contingencies in their contracts, as for the effect of a decison on the status of Canadian shipments.

Canadian competition in newsprint is cutting a constantly increasing figure in the United States market, and prices for that commodity have declined $2 or more. The force of this competition, it is said, has been felt particularly strongly in Chicago where one or two large contracts have been obtained by Canadian mills. There is no shadow of doubt that the recent great additions to Canadian mill capacity is going to have a very marked effect on the United States newsprint market, especially as time goes on. Their up-to-date construction, efficient management largely it must be admitted along American lines and above all their accessibility to cheap pulpwood supplies, are all factors bound to have a very important result. As noted in this issue, a well-known paper man in conversation with a Montreal representative of the Pulp and Paper Magazine, deprecates the building of new mills in Canada on the ground that the industry will be overdone and that as soon as the Americans see the effect on their own industry, they will induce their government to put up the duty. We agree that great care and conservativeness should be exercised in the matter of building of new mills, and that the tendency to stock-jobbing and over-capitalization should be avoided. On the other ground, we would point out that the United States paper industry has been protesting to its Government as to its rights for proper protection for many months now and failed even while that Government was Republican. Now that the Democrats will be in control, it is hard to see how they can expect better fortune. And even if the United States duty on paper were increased, we cannot see that it would jeopardize the safety or progress of enterprises in this country, wherever properly managed.

New York State paper, pulpwood and lumber interests are up in arms against the recently suggested plan of the Canadian railroads to advance freight rates on wood. In the attempt to check the proposed increase they suggest the establishment of a common docking ground near Ogdensburg, N.Y., for the storage of Canadian pulpwood, to which point it would be brought on barges by the river and shipped by short haul from there by American railroads. The freight rate from the forests where much of the wood is cut to Ogdensburg is $3.50 to $4.00 per cord, which the railroads propose to advance, while water rates from the same point are only $1.50 to $2.00 per cord. Many of the largest paper manufacturers of Northern New York are said to be interesting themselves strongly in the scheme.

Few realize the great scope of the work which is being done on behalf of the wood-using interests of the country, and largely for the benefit of future generations, by the Forestry Branch of the Dominion Department. Mr. R. H. Campbell, the able director of this branch of the public service, gives some idea of this work and of the difficulties of carrying it, in an article in this ssue, and the Pulp and Paper Magazne hopes to keep its readers in touch. in future, with what is being done in forestry, a science and art so closely allied with the pulp and paper industry. In the past, practical lumbering men were given to despise forestry, as a system of theories which were a stumbling block to the profitable carrying on of their business. Gradually, however, under the leadership of the more far-seeing and of the truly practical in the real meaning of that word, they have come to see that theory and practice stand together, and that even from a dollars and cents point of view, conservative methods are profitable. A branch of the work of the forestry department to which more attention is now being given is the utilization of the waste and by-products from different kinds of wood-using factories, a subject which is bound to grow in commercial importance as time goes on.

A. G. McINTYRE, Editor

F. PAGE WILSON, Assoc. Editor

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of Canada

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To the Reader:—

This Magazine is published solely in the interests of all branches of the Pulp and Paper Industry.

The Editors aim to make it of scientific and practical value to millmen, of assistance to the sales departments of mills and supply houses, and, by giving the latest news, of interest to all.

The co-operation of everyone engaged in the industry will materially assist this undertaking.

Suggestions from your experience and copy on suitable subjects, will be most welcome, as well as your subscription on the attached blank.

Yours very truly,

A. G. McINTYRE, Editor
F. PAGE WILSON, Assoc. Editor

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PRICE BROTHERS AND COMPANY, LIMITED KENOGAMI PAPER MILLS

This Company's Splendid New Plant Now Operating

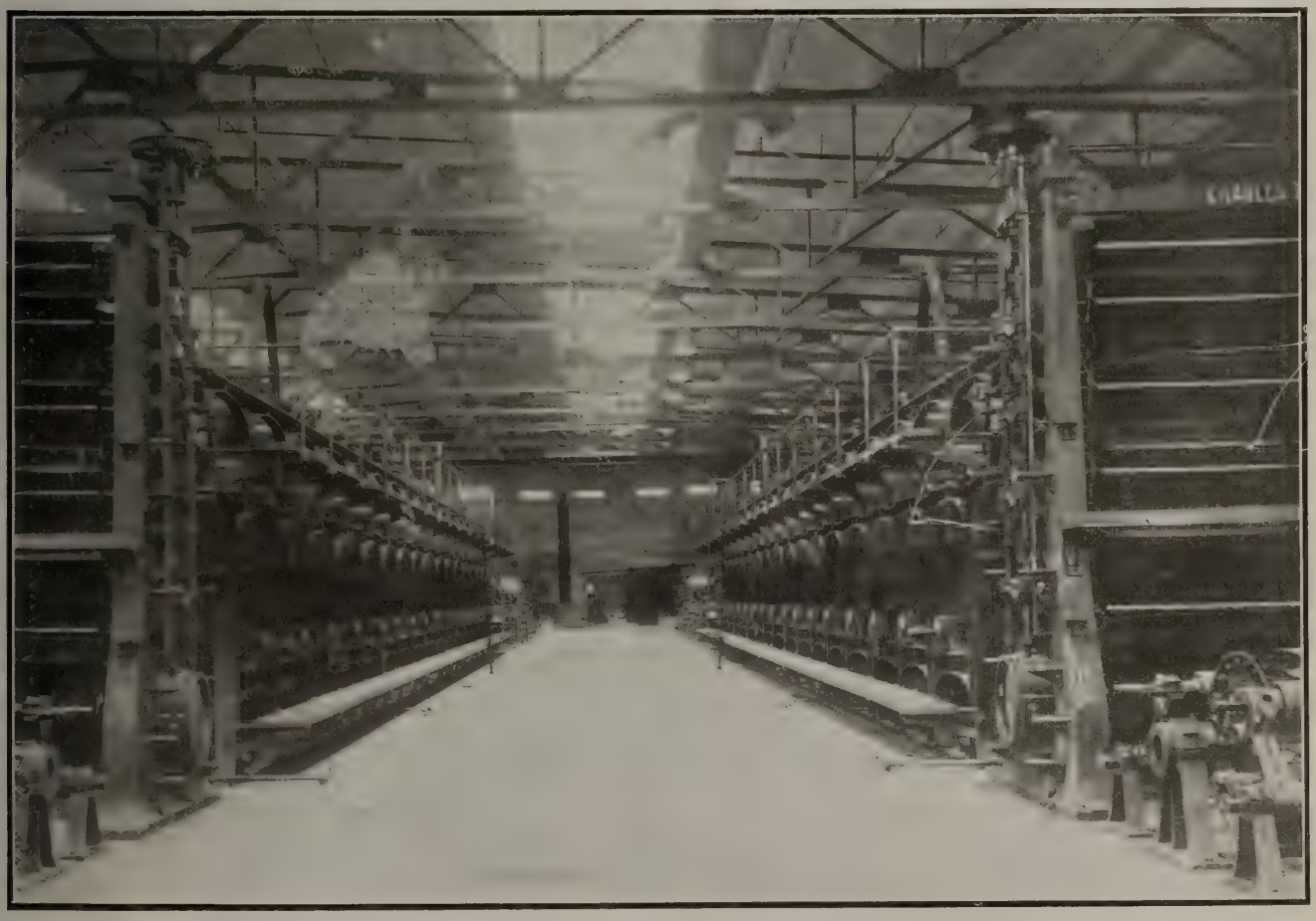
The Province of Quebec has earned an enviable reputation on both sides of the water for the rapid development of her paper industry. Bounteous nature has scattered opportunity with a lavish hand, inviting the exploitation of a country rapidly realizing its enormous possibilities for gigantic enterprises.

It is pleasing to note the points of interest in one of the newest and largest Canadian mills, which may be looked upon as an expansion of the smaller Jonquiere Pulp Co.—this firm's first paper mill. The two plants are only a mile apart on the line of the Quebec & Lake St. John Railway, and on the Au Sable River, ten miles from Chicoutimi—the head of Saguenay River navigation.

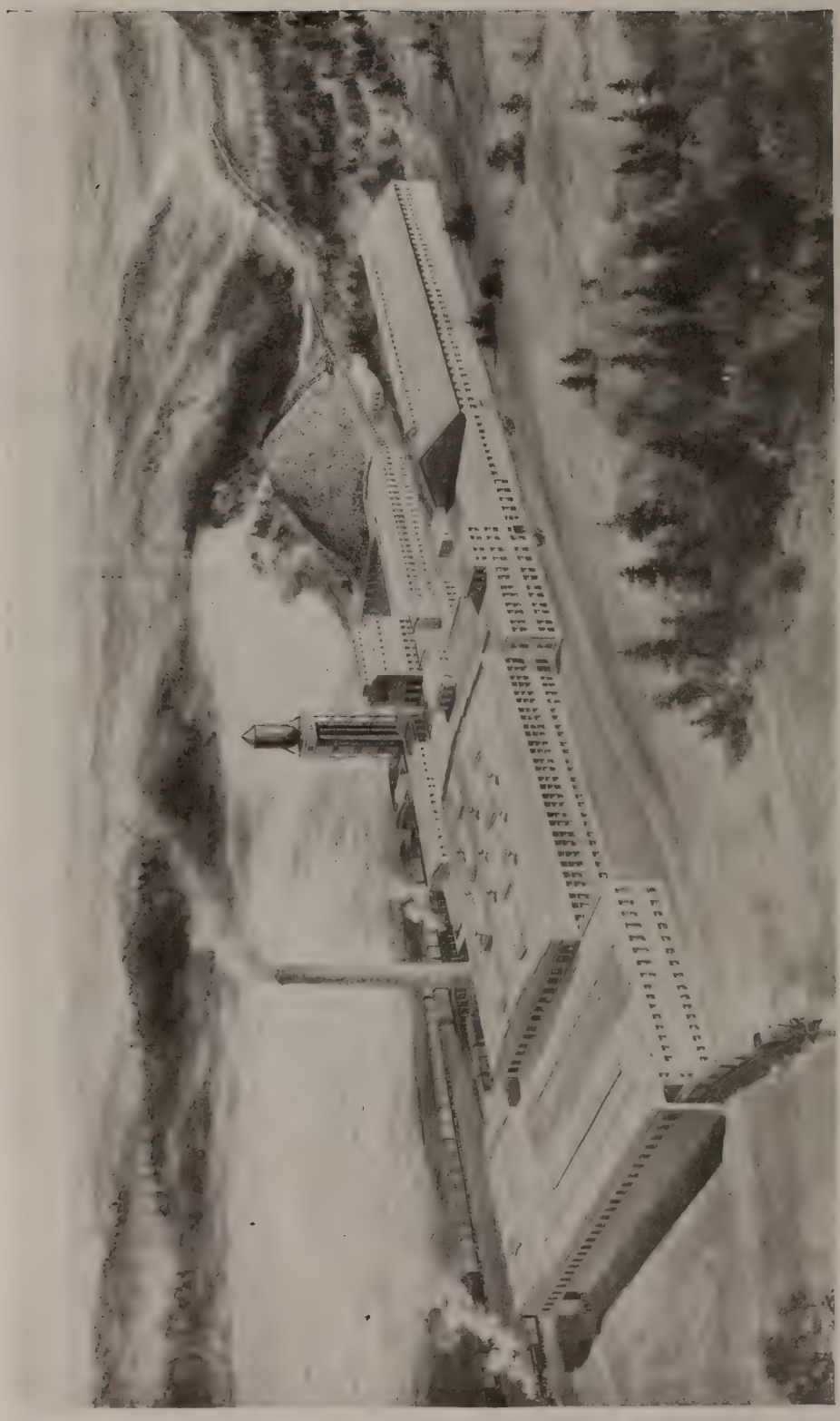
Price Bros. have been in existence as a lumber firm for over a century, although as pulp and paper manufacturers for only a few years. The Kenogami Paper Mills, which will earn their reputation in the broader field of the paper industry, command the attention of both the engineeer and financier. The former admires the natural advantage and the efficiency of the plant, the latter the sound financing, organization and conservative judgment of the directorate.

Mr. Wm. Price, the president, is widely known throughout Canada in both lumbering and political circles, being one of our most popular business men, on account of his well-known integrity and interest in Canadian development. He is an ex-M.P. for Quebec City, and has recently been appointed to the honorable and onerous position of chairman of the Quebec Harbor Commission.

Mr. Oswald A. Porritt, the general manager, associated himself with Mr. Price about twelve years ago in the Price-Porritt Pulp Co., of Rimouski, later becoming vice-president and managing director of the Jonquiere Pulp Co. He is known throughout the industry as a thorough paper man and an exceedingly energetic and enthusiastic business man. An Englishman by birth, but now a heart and soul Canadian, he brings much zest to the development of our natural resources amid the many difficulties of the northern sections, with which he is now thoroughly familiar.



Two of the Walmsley Paper Machines



Pulp and Paper Mill of Price Bros. & Company, Limited, Kenogami, Que.

Present Capacity, 150 tons of News print paper per day



William Price, President



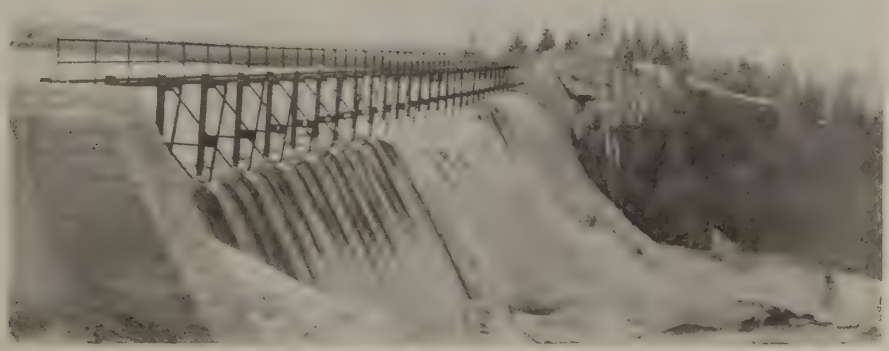
O. A. Porritt, General Manager

Raw Material.

The logging division of Price Bros., with head office in Chicoutimi, is in charge of J. McD. Grosart, a grandson of David McDowall, who in 1834 started the first steam saw mill in Ireland, and son of Rev. A. B. Grosart, D.D., LL.D., of Blackburn, England. He came to Canada in 1898 as junior clerk with Price Bros. at St. Etienne du Saguenay. Since that his rise with the firm has been rapid, due to business acumen and marked ability in the management of men. The figures for wood delivered at the mill under his management have been very low, a point which means much for the success of the new enterprise.

The total limits consist of 4,829,000 acres of leasehold and 150,000 acres of freehold land containing over 3,000,000,000 feet (B.M.) of merchantable timber and 20,000,000 cords of pulp wood. On these limits, besides the two mills above mentioned, the company operate nine saw mills, three shingle mills, one rossing mill, and one ground wood mill.

Immediately tributary to the mills at Jonquiere and Kenogami are 2,500 square miles of black spruce, with a very small per cent. of fir on Lake Kenogami, and River Ecorces, Morin, L'Abbe, Tuppaway, Pikauba, Belle, and Metabetchouan, timber from the last two being landed in cars by overhauls and shipped 30 miles to the mill by rail. In addition to this, there is an area of 2,000 miles on the Saguenay, from which wood could be used for these mills as well. All logs are made 13 ft. 6 in. for driving through Lake Kenogami, and 8 ft. for rail transportation. Operations are conducted in accordance with the Provincial regulation, for forest preservation, and utilization of waste, cutting everything above 4 in., thus leaving practically nothing on the ground.



Solid Concrete Gravity Dam, Au Sable River



Cones and Dryer Drives

A West & Peachy, "Alligator," or warping tug, capable of towing 25,000 logs, and warping on land or water, has been introduced last season, thus greatly facilitating the lake operations.

All logging is done by small "jobbers" residents in the counties of Lake St. John and Chicoutimi. At present over 200 of these are in the bush on contracts from 5,000 to 125,000 pieces each, or a gross of 53 million feet for the season. The company do their own driving.



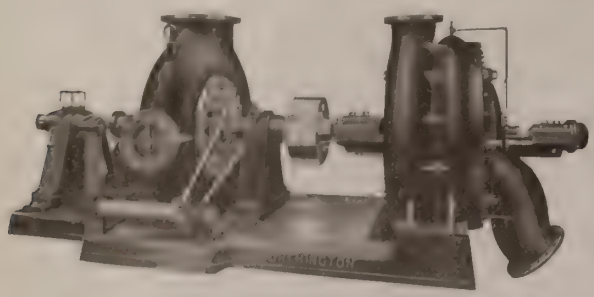
Waterous Stacker and Wood Pile

Fifteen sets (2 each) of cullers or measurers, and twenty-five fire rangers are kept in the bush by the company, who have also established telephonic communication over their limits, which are insured at Lloyds.

Water Power.

On the Au Sable River they have developed 6,000 h.p. for the Jonquiere Pulp Co., 2,000 h.p. for the lighting and auxiliary power, and 18,000 h.p. for the Kenogami Mills.

A supplementary power of 7,000 h.p. is now being developed on the Shipsaw River, three miles from the new mills. Allis-Chalmers-Bullock, Limited, are at present installing two water wheels with steel plate casings of 3,300 h.p. each at 300 r.p.m., with exciter wheels of 155 h.p. each under a head of 85 ft. This will be used to run extra grinders at the mill and for other purposes as needed. They also have 4,000 h.p. undeveloped at Chicoutimi.



Turbo Stock Pump and Waterwheel, 4,000 U.S. gals. per min. of ground wood, 340ft. head, 600 h. p., 1000 r.p.m. John McDougall Caledonian Iron Works, Co., and Allis-Chalmers-Bullock, Ltd.

Grinder Room.

The new solid concrete dam shown in the cut, at the head of Chute a Bezie, is one half mile from the Saguenay River. From the forebay of this dam a 12-ft. steel penstock runs 3,000 feet to the power house and grinder room, situated just at the junction of the Au Sable and Saguenay Rivers. Four branches of reduced size feed the four-wheel units working under 264 ft. head. In the power house, two 2,340 k.v.a. Westinghouse generators are driven at 600 r.p.m. by Allis-Chambers-Bullock turbines of the Francis type, with special design to prevent end thrusts and sticking of guide vanes. Four oil pressure relay governors are used on the generator and pump water wheels.

The grinder room is equipped with four 4,000 h.p. water wheels of the same type, each being connected to six Waterous grinders of the International pattern.



J. Mc D. Grosart, Manager of Woods Operations

These wheels are hand-governed, running at 225 r.p.m., but the grinders have Barbour pumps for each wheel set. The ground wood, after passing over the sliver screen to a large sump is pumped to the wet room, 4,000 ft. away through a 2-ft. wood stave pipe, supplied by the National Pipe & Foundry Co. These turbo-pumps, built by the John McDougall Co., are direct connected to two Allis-Chalmers-Bullock turbines of 600 horse power each, running at 1,000 r.p.m. The pumps have a capacity of 4,000 U.S. gallons per minute of 35 per cent. of 1 per cent. stock, against a total static and friction head of 340 feet. The grinder room and power house are each supplied with 15-ton hand Northern travelling cranes, as is the machine room and repair shop.

The wood is prepared at the paper mill where the waste can be used in the boilers, and is either conveyed by a block trough, in running water, to the grinder



Generator Turbine, Showing Relay Governor and Fly Wheel. Allis-Chalmers-Bullock, Limited

room or by a Waterous travelling stacker when it is stored barked. The wood room has 30 Waterous disc barkers, two chippers, a Ryther & Pringle six-saw slasher bed and shake screen. All conveyors and return conveyors are chain, with individual motor drive.

The ground wood wet room is most conveniently arranged. Two rows of six Waterous double cylinder wet machines on either side with a Jeffrey lap conveyor passing between, to the pulp storage. Fourteen horizontal Quiller screens, with belt drive, four refiners and one Ryther & Pringle shredder complete the equipment of one of the finest wet rooms in this country.

Sulphite Mill.

The equipment here consists of two digesters 14 x 47 ft., with blow pits and an extra large riffler capacity. New Success screens, three Waterous single cylinder wet machines and one Appleton Jordan.

Last season Mr. J. A. Decew, of Montreal, was retained as consulting chemical engineer, and carried on elaborate investigations with his assistants in the field and laboratory. He selected a pure limestone 30 miles from the mill on Lake St. John for the acid system. This is a good omen for the Canadian paper trade to see our managers employing technical experts to solve their difficulties as those of other countries do. The view often held that anything will do that makes money is, we are pleased to say, passing, and the trade to-day realize that there is no reason why the industry should not be even more profitable with a little time and money spent in investigating more efficient methods.

Paper Mill.

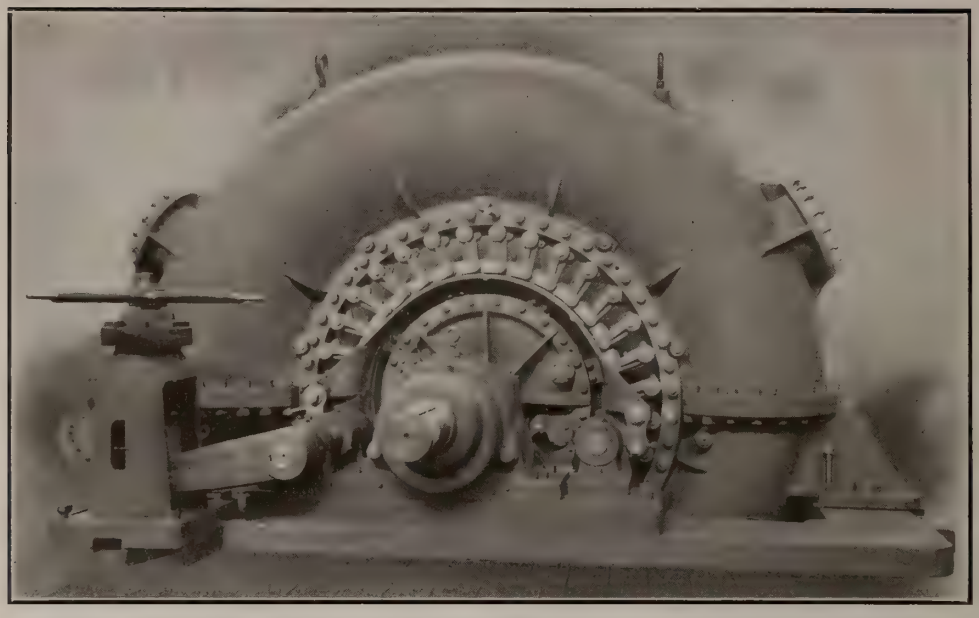
The three paper machines 156 inches wide, trimming 145 inches, were built by Charles Walmsley & Co., of



One of the drives

The acid system of five towers 175 ft. high has two Glens Falls rotary burners with spiral feed, and a large pond cooling system. Fresh water for the new town and the boilers is supplied from a new water system to the 125,000-gallon steel tank on top of the tower.

Bury, Eng., after the design of two similar machines running at Lloyds, Sittingbourne, Eng. They have a number of features unique in Canadian mill practice, such as the patent Lloyd & Hutchinson basement drive, of which we show cuts. An enclosed Walmsley



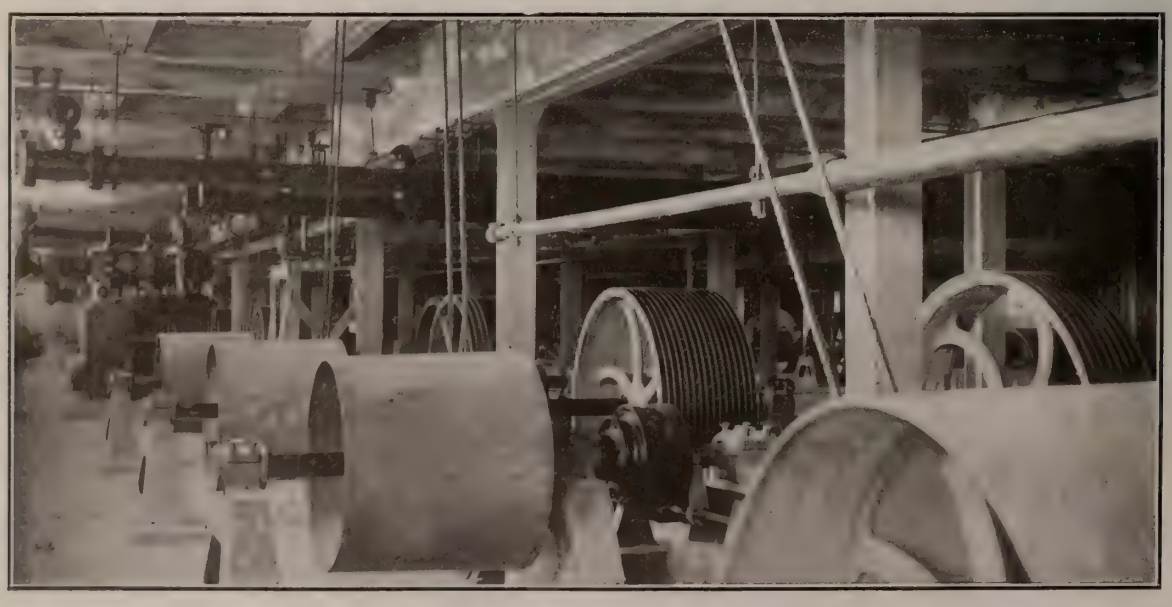
Grinder Water Wheel Showing Hand Governing for Guide Vanes. Allis-Chalmers-Bullock, Limited

steam engine in the centre drives a main shive direct connected, which drives by single cotton ropes to the next shive, and this to the next, each carrying a cone pulley, belted to a cone on the machine floor, and with their patent quick throw out clutch. The engine itself has a speed variation of 1-5. This, with the cones, gives a wide range for the machine which is guaranteed for 600 per minute and promises to go 700 feet—about the maximum speed backtenders can handle the winders. The machines have 72 ft. wire, all bearings bronze, ring oiled, 36 5-ft. dryers, special wire tighteners and straighteners, and special automatic felt straighteners. The castings are all extra heavy typical of English machines, and are well machined. Farrell Foundry Co. are also represented on the machine floor, with their calenders.

The beater room is equipped with six E. D. Jones 1,500-pound beaters and three Jordans, as well as two broke beaters in the basement of the machine room. Four Waterous ground wood thickeners and three Sherbrooke Machinery Co.'s sulphite thickeners arranged in battery and with throw out clutches to bypass any single machine. This firm also supplied six save-alls for that building. The centrifugal pumps for the entire mill were supplied by the Lawrence Pump & Engine Works, and the stuff and feed pumps by Smart Turner Machine Co.

The boiler room is a fine example of mechanical engineering in its layout of the following equipment: Eight Robb boilers with superheaters, and Murphy stokers to burn coal and work-room waste; a Kellog stack 125 feet high, and Green economizers, with induced draught. The newest feature is the suction ash handling system, similar to the Lake Superior Paper Co., which gives good satisfaction when care is taken to keep the ashes dry.

Mr. Geo. F. Hardy, of New York, designed the entire plant, and Mr. R. S. Kelch, of Montreal, was retained as consulting engineer in the hydraulic and electrical work.



Basement Walmsley Paper Machine Drive, showing Enclosed Engine, Shives, Cones and Clutch

THE WORKMEN'S COMPENSATION ACT
(QUEBEC)

By H. S. Ross, K.C., of the Montreal Bar

Compensation for workmen injured in the course of their daily labor is a subject which has steadily grown in interest, until now it has become a legislative problem of huge dimensions in every country, and particularly in those largely engaged in manufacturing. The principles hitherto governing the relations of master and servant are steadily undergoing changes of a radical character, with the probability that ultimately the defence "negligence of employee" and "fault of fellow servant" will disappear completely from our jurisprudence. The conviction is deepening that the money value of injuries suffered by workmen is properly a charge against the cost of production, payable by the consumer or user of the article produced.

The problem is engaging some of the best minds—labor leaders, millionaires, manufacturers, philanthropists, jurists, and sociologists. There is little disagreement between them respecting the accuracy of the leading principle, that is, that the negligence of the injured worker should not be an insuperable bar to the recovery of compensation to some extent; and the principle has been enacted into law by nearly all of the civilized countries of Europe, by Australia, by New Zealand, by the Transvaal, by the principal provinces of Canada, and in a partial form by one or more of the South American Republics.



Beater Room. Price Bros. & Co., Limited

The Workmen's Compensation Act (Quebec) came into force on the 1st of January, 1910, and supersedes the provisions of the common law. The Civil Code makes everyone responsible for the damage occasioned by his own or his servants' fault, neglect or want of skill, and injured workmen have always been able to recover compensation from their employers. There were, however, many difficulties in the way of the claimant even when the employer was clearly at fault. The employer could raise a number of defences such as "contributory negligence" and "inherent risk." The common law of Quebec Province was more humane that the common law of England, but under the statute law of England workmen were given the relief they had been claiming and our recent Act adopts the main principles of the English Act, although modeled upon the French Workmen's Compensation Act, which came into force on July 1, 1899.

All workmen engaged in industrial enterprises are entitled to compensation for accidents happening by reason of or in the course of their work, but the Act does not give relief in cases of industrial diseases, such as lead, arsenic or mercury poisoning, anthrax and diseases caused by working in mines, although all of these are covered by the English Act.

Workmen who usually labor alone, even when casually working with others and those whose wages exceed one thousand dollars a year are not provided for by the Act, but of course their common law right is still in force.

The Act does not apply to agricultural laborers nor to seamen on sailing vessels.

A foreign workman or his representatives are not entitled to compensation unless at the time of the accident he or they reside in Canada, nor after he or they cease to reside in Canada while the compensation is being paid.

An interesting instance of international legal relations is afforded by the recent Convention between England and France in regard to workmen's compensation and under which any British subject who meets with an accident arising out of his employment as a workman in France is entitled to the benefits of the compensation and guarantees secured to French citizens by legislation in force in France in regard to the liability of employers for accidents to their workmen, and reciprocally, any French subject who meets with such an accident in the United Kingdom is entitled to the benefits of the English Workmen's Compensation Act. Where a lump sum is payable to a French citizen it may, on his return to France, be transmitted by the Registrar of the County Court to the "Caisse National Francaise des Retraites pour la Vieillesse"—which will purchase an annuity—and when a French citizen who is in receipt of a weekly payment intends to return to France the payments are made every three months.

The workman need not prove negligence and may recover even when the accident was unavoidable, or due to an unknown cause.

The employer may raise the defences:

1. That the accident did not happen "by reason of, or in the course of the work."

Our Courts will no doubt be guided (when considering such a defence) by the cases which have arisen under the English Act. The cases have been many and some of them very curious, but on the whole the Courts have refused to take a narrow view and as a rule the employer does not find this defence of much service.

2. That the accident was intentional.

It is, of course, very difficult to sustain such a defence. This clause was adopted from the French Compensation Act. The English Act does not go quite so far, the words used being "willful or serious misconduct."

If the workman was inexcusably negligent the employer may claim a reduction of the compensation and the employer may be compelled to pay an increased

amount if he has caused the accident by his inexcusable fault. When the accident causes death the compensation shall be a sum equal to four times the yearly wages of the deceased at the time of the accident and shall in no case (except if the accident is due to the inexcusable fault of the employer) be less than $1,000 or more than $2,000. In the case of Frank McDonald vs. Canadian Pacific Railway, now on its way through the Quebec Courts, and which will probably be finally decided by the Privy Council, the interesting point has been raised as to whether the rent, which can be purchased for $2,000 is the largest amount recoverable under the Act. Formerly workmen frequently recovered four or five thousand dollars. It is contended that an apprentice earning $200 per annum who is totally and permanently disabled would recover the same amount as a workman earning $1,000 per year, and therefor it becomes impossible to award a rent in proportion to the wages earned. Our Courts have already given judgments for a rent much larger than could be purchased for a capital of $2,000. Legault vs. Loomis, Archer, J., September 28, 1910, allowed a rent of $140 per annum. Glover vs. Otis-Fensom Elevator Co., Demers, J., April 7, 1911, allowed a rent of $162.76. McDonnell vs. Grand Trunk Railway, Tellier, J., November 21, 1911, allowed a rent of $210.

The Appeal Court in McDonnell vs. Grand Trunk Railway upheld the award of a rent of $210.

The compensation is payable as follows:

(a) To the surviving consort not divorced nor separated from bed and board at the time of death.

(b) To the legitimate children or illegitimate children acknowledged before the accident to assist them until they are sixteen years of age.

(c) To ascendants of whom the deceased was the only support.

If the yearly wages exceed $600 no more than this sum shall be taken into account, and the surplus up to $1,000 shall give a right to only one-fourth of the compensation above referred to.

There are probably as many actions commenced as before the Act, but the procedure is much simplified, and many cases are settled by the judges acting as arbitrators. If a settlement cannot be reached the case is tried in the usual way except that all such cases are now summary and there is no trial by jury. If the Court wishes it the workman may be granted a daily allowance during the course of litigation.

VEGETABLE SIZE FOR ART PAPERS.

As a rule, the German manufacturers use only casein, but during the last few years starch products have been marketed which are a good substitute for casein. These are of American origin, and are prepared from potatoes. Gluten can be used, provided it is perfectly neutral. Nearly all commercial gluten (otherwise called vegetable size) contains free alkali. If gluten is neutral, it is quite as good as casein and cheaper, although more of it required. If it is not, it is dear at any price. Probably, however, a really first-class quality of joiners' glue is better than any of these products. It must, of course, be so pale that the quantities of it which have to be used, which are the smaller the better and paler the glue, have no appreciable effect on the colors of the illustration.

INFLUENCE OF SUPERCALENDERING ON THE PROPERTIES OF PAPER.

The treatment of paper on the supercalender is primarily decisive for the nature of the surface; in the closest relation therewith is the thickness and the bulk of the paper. Further, the color, look-through, transparency, and, particularly, the sizing of the paper are influenced by the treatment on the supercalender. With papers having distinct wire or felt markings a dull uniform finish can never be obtained. Uneven glazing is particularly objectionable in envelope paper because the feed of the paper on the gumming machine becomes uneven, and consequently the breadth of the gummed edge varies. Unglazed papers are almost twice as thick as highly glazed papers. For example, an envelope paper containing wood, four layers of which, taken from the machine measured 0.50 mm., measured only 0.24 to 0.25 mm. after they had been highly glazed. When employing less moistening and less supercalender pressure the thickness can be kept at 4.30 mm. without the glazing being too slight.

Further, owing to uneven glazing differences of color between the various rolls of one and the same lot occur. Black glazing frequently occurs with white paper owing to too severe moistening and pressure, and in the case of highly loaded papers in consequence of too long storage in the moist condition. Uneven, cloudy look-through of the paper can be partially avoided by careful moistening and glazing. On the other hand, in the case of papers having water-marks or ribs, they should be treated as gently as possible during the glazing if the finish of the paper is not to suffer. When endeavoring to obtain as close a surface as possible, a certain increase of transparency must be taken into the bargain. In order to obtain a uniform dull glaze with little transparency the glazing should be done two or three times at a slight pressure.

Very great glass-like transparency, as in pergamyn paper, primarily requires special beating, moistening with about 18 per cent. water and employing narrow supercalenders about 1.2 mm. working breadth, well heated steel rolls, hard-pressed asbestos paper rolls and high pressure in the supercalender.

The influence of glazing on sizing is important but frequently overlooked. Particularly, by insufficiently heating the steel rolls of the calender a paper of insufficient sizing may be obtained. This fact was established by envelope paper taken from one and the same lot and glazed on various supercalenders being too slightly sized in one definite supercalender. The defect disappeared as soon as the steel rolls of this supercalender were heated as highly as in the other calenders.

The samples sent us by the author show a striking difference in the sizing in favor of the papers glazed with highly heated rolls.—Papier Fabrikant.

The Brompton Pulp and Paper Company are building about 30 miles of telephone line this fall, which will make in all over 60 miles of private line practically surrounding their limits. They are doing this with the idea of placing a telephone at every dam owned by the company to facilitate the drive which they have every spring. They consider this very essential for the protection of their limits during the dry season.

PRESERVATION OF PAPER

By JOHN NORRIS, Chairman of the Committee on Paper of the American Newspaper Association

Hints for Paper Manufacturers from the Desire of Librarians to Furnish Current History to Future Generations; Specifications for a Paper That Will Endure Indefinitely; Methods of Storing Print Paper Rolls and Bound Files of Newspapers.

Much has been said recently by librarians about the inferiority of the newsprint paper which goes into bound files of the libraries for the purposes of reference and historical preservation. An examination of the places of storage in the libraries and of the conditions of storage convinces me that while the ordinary newsprint paper may not be in any respect suitable for purposes of preservation, the methods of handling those papers when bound are conducive to deterioration. This criticism applies not only to libraries, but to newspaper offices and substantially to all places where newspaper files are stored. In many of the libraries, the files are subjected to treatment which deprives the paper of its required moisture. The libraries dry out the newspapers by keeping them in rooms with an average temperature of 70 degrees, which is bound in the course of time to cause deterioration. The artificial heat renders the paper extremely brittle and makes it crumble like isinglass when handled. Excessive dampness is also disadvantageous.

How Improvement May Be Obtained.

Improvement in the preservation of these historical records may be obtained:

1st. By using a printing paper that will endure indefinitely.

2nd. By binding with materials that do not attract minute organisms.

3rd. By storing under conditions (a) that do not deprive the paper of all its moisture; (b) or subject it to excessive dampness; (c) or subject it to chemical action produced by sunshine or gas or artificial heat or similar agencies of deterioration; (d) or propogate insects or other growth.

In gathering information that relates to the preservation of the printed paper, I have, at the request of newspaper publishers, inquired about the storage and preservation of newsprint rolls which I will also touch upon in this compilation.

The matter of paper preservation has attracted attention for centuries. Pliny says the ancients preserved their paper and books from moths by washing them with cedar or citron oil. In 1773 the Royal Society of Sciences at Gottingen offered a premium for the answers to questions relating to insects found in records and books. The answers accepted at that time indicated that five insects were destructive and that six appeared to be doubtful. They recommended that bookbinders use glue mixed with alum in place of paste. The ravages of insects vary according to latitude. The cigarette beetle has been described as the most destructive raider upon books. A publication entitled "Bookworms of Fact and Fancy" gives a list of insects and includes:

The bed bug, found in wood papers;
White ants, found in clay fillers;
Roaches, after oils and fats in parchments;
Beetles, in skin bindings;
Spring tails and Silver Fish, in dry and warm locations;
Centipedes and scorpions, which prey upon the insects found in libraries.

These live promoters of paper deterioration may work considerable damage in warm latitudes, but in the important libraries which are located in the more northerly latitudes I believe their damage is negligible.

Composition of Newsprint Paper.

Newsprint paper is made by the mixture of approximately 75 per cent. of mechanical wood pulp and 25 per cent. of sulphite wood pulp with a slight addition of clay and rosin.

The agencies leading to decay, according to my limited observation and study are:

Artificial heat.
Gas combustion.
Sunshine.
Oxidation.
Excess of mineral substances.
Excessive dampness.
Carelessness in bleaching and inferior materials in binding.

Mechanical pulp will deteriorate rapidly when exposed to air or light. R. W. Sindall, an English authority, says many of the books printed on wood pulp paper between 1870 and 1880 are in a hopeless condition. With lower-grade papers containing mechanical pulp the degradation of color and fibre is inevitable. Clayton Beadle points out that paper which is brittle, when very dry, becomes stronger and more pliant with a certain amount of moisture. With more moisture it loses its power of "felting." There is a point where the maximum strength is obtained. Prof. Herzberg, of the German Testing Institute, is credited with the statement that paper containing three to five per cent. of moisture is at its strongest. Newsprint paper will absorb close to 10 per cent. of its weight in moisture. Most of this paper when manufactured contains about five per cent. of moisture or 100 pounds per ton of paper. It is liable to absorb 80 pounds additional of water per ton of paper in transit from mill to newspaper office. The additional weight of the paper when delivered has puzzled many newspaper publishers who almost invariably found that their rolls weighed more than the weight indicated at mill. A recent litigation in England disclosed the fact that jobbers had bought a less weight of paper than the customer had demanded, the jobbers relying upon the absorption of moisture in transit to make up the deficiency.

English librarians report that the ordinary novel printed on light, spongy paper has a life of about 40

issues. In other words, it will be unfit for further use and not even worth rebinding after circulation among 40 readers.

The American Chemical Society appointed a committee in 1908 to find a paper more suitable for the records of the society. It sought to ascertain the most durable, strongest, lightest, thinnest, most opaque, and cleanest paper having a surface not injurious to the eyesight that it was possible to procure for the money available. The specifications adopted by that society were:

Rag, 75 per cent.
Bleached chemical wood or equivalent thereto, 25 per cent.
Ash (China clay), 5 per cent.
Weight (26 x 38, 500)—42 pounds.
Strength (Mullen) 15 pounds.
Folding number (Schopper) if practicable, 10 pounds.
Sizing, three-quarter rosin—no starch.
Finish, uniform machine, same both sides.
Color, uniform, natural, paper must be well washed to remove soluble salts and bleaching materials.
The paper cost approximately 6½ cents per pound.

Complaints of Librarians.

At a conference of librarians in 1909 at Bretton Woods, N.H., Frank P. Hill, Librarian of the Brooklyn Public Library, read a paper on "The Deterioration of Newspaper Paper" wherein he narrated the results of an examination of the bound copies of Manhattan and Brooklyn newspapers filed in Brooklyn Library. He said: "In many instances papers published within the last forty years had begun to discolor and crumble to such an extent that it would hardly pay to bind those which had been folded for any length of time. Further investigation showed that practically all of these newspapers were printed on cheap wood pulp paper, which carries with it the seeds of early decay, and that the life of a periodical printed on this inferior stock is not likely to be more than fifty years." The librarian sent out circulars to publishers asking whether a better grade of paper was being used for running off extra copies for their own files and what, if any, means had been taken to preserve the files in their offices. The answers showed that no special paper was used and that no means were taken to preserve those in the worse condition. Inquiries were sent to paper manufacturers with no more satisfactory results. Mr. Hill had not then found any newspaper that printed extra copies on a better grade of paper, but subsequent inquiry has disclosed that the Red Wing Republican, of Red Wing, Minnesota, prints 15 copies daily from which number it supplies paper to the Minnesota Historical Society and the Congressional Library, at Washington. It binds some for its own use and places them in vaults for reference. Its secretary and manager, Mr. Jens K. Grondahl, says a fair grade of book paper is used. The paper has not obtained any scientific test. Mr. Hill's paper described the use of a liquid mixture in the German Governmental Paper Testing Institute, of Berlin, by the use of which it was aimed to indefinitely preserve wood pulp papers and make them fit to read for centuries to come. The method was to dip the sheets one by one into a "cellit" solution and then hang them up to dry or to spread them on large meshed nets. Mr. Hill suggested that it might be to the interest of publishers and librarians if a few copies of each issue of the newspapers should be printed on paper which had been treated with this chemical in the roll.

At a recent meeting of the Committee of the American Library Association, Mr. Cedric Chivers, a bookbinder, of Brooklyn, spoke of the successful experiments he had made with the German product "Cellit," by painting the edges of bound volumes with it. He was of the opinion that paper so treated would last 50 or 75 years, and that the treatment could be repeated with the same result. The expense of treating the volume page by page might deter most librarians and publishers from attempting that method of preservation. He pointed out the necessity for binding the newspapers as quickly as possible so that they might not long be exposed to the air.

United States Government Specification.

In 1904, Secretary Wilson, of the Department of Agriculture, authorized the Bureau of Chemistry to investigate the subject of suitable papers for Government purposes. The investigation covered about 5,000 samples of paper and resulted in the issue of two circulars by the Bureau of Chemistry. Subsequently the Joint Committee of Congress on Printing appointed a Commission to pass upon this matter. Its report was adopted December 18, 1911, and now controls all Government supplies of paper and printing and binding materials. In the following month, a public bidding was held. The standard specification for printing paper that would "endure indefinitely" was as follows:

Weight, 25 x 40, 500; 50-pound basis (24 x 38-45).
Thickness shall not exceed .0035 inch.
Strength shall not be less than 18 points.
Stock shall be not less than 75 per cent. rag; the remainder may be bleached chemical wood, free from unbleached or ground wood pulp.
Ash shall not exceed 5 per cent.
Size—The total rosin shall not exceed 2 per cent.

The use of this paper was to be limited to copies of those permanent publications intended for Government libraries or Government use, or, at most, be limited to the copies placed in the depository and university libraries of the country. This is intended as the permanent printing paper for the service, and while its use will not be extensive, it will serve a very important purpose. The important historical documents of the Government and its original scientific contributions should be printed on permanent paper. It is also desirable that such publications as the Statutes at Large should be printed upon this grade of paper.

Mr. Veitch, of the Bureau of Chemistry, who was a member of a Government Commission on Paper Specifications, and who has given much research to these matters, says there is need for two sets of papers, one for ordinary handling and immediate accessibility, and one for storing away for future reference. It should be practically inaccessible. He writes: "No paper which is subject to a great amount of handling and use can prove absolutely permanent. Even the best paper, if handled, will deteriorate and go to pieces, and, if handled constantly, would last but a few years. If handled very little, it would last for several hundred years, and if the volumes were opened but several times a year and were stored in a suitable place, they would undoubtedly last for many hundreds of years. In other words, the problem is one largely of use and storage.

"The sheets should never be folded. They should be kept in binders and not folded repeatedly backward and forward upon themselves."

The Bureau of Chemistry and the Bureau of Standards at Washington concur in the matter of ink. They say:

"Very little difficulty would be experienced with the ordinary printer's ink. The black inks consist essentially of carbon, which is very permanent, and, therefore, very little anxiety need be felt for any publications printed with black ink."

How the Congressional Library Cares for Old Newspaper Files.

In the Congressional Library at Washington, special efforts are made to preserve eighteenth century files. The volumes are sealed in dust proof cases. They are bound with buckram and finished with materials recommended by the best authorities. The books lie flat with air spacing every six inches for ventilation. Channel iron ribs are used in the stacks. Air that has been washed or screened to remove dust is forced through the stacks and then exhausted. The temperature is kept uniform the year round. Flour paste boiled with alum is used for binding. Protecting sheets of paper are inserted between every double page. A thin tough linen ledger paper is used for guards. The only possible criticism that might be offered toward the perfection of these provisions for preservation is the occasional sunshine in the storage room. The volumes thus protected cost $10.00 each for binding. The ordinary binding of the current newspaper volumes in the Congressional Library costs $2.00 per volume. The deleterious effects of the products of gas combustion are avoided in the Congressional Library because electricity is used for illumination when artificial lighting is necessary. No records are kept of the humidity of the atmosphere. The cleanliness of the entire establishment is its insurance against animal organisms.

In the New York Public Library, the newspaper files are stored upright, in well ventilated stacks with some protection against dust by the screening of the air. The thermostat in the public file room was fixed in August at 68 degrees. The files in the north room and in stacks rest on steel ribbed shelving. No attempt is made to regulate the humidity of the storage place. Gas is not used in the building.

Four large steam pipes pass through the room of the Montague branch of the Brooklyn Public Library, containing the old New York Herald files. There is no sunshine there, but the main hall where most of the newspaper files are kept is flooded with sunshine. Some of the files lie flat and some are upright. The ordinary effort is made to preserve uniform temperature by heating in cool weather, but there is no special regulation of temperature, or humidity, or ventilation, or exclusion of dust.

The Philadelphia Public Library stores its newspaper files flat in the cellar. It permits the access of very little sunshine. There is some ventilation and some opportunity for variations of humidity due to changes in the atmosphere. Gas throws off its deleterious products of combustion in this room. Steam heated pipes pass through the cellar. The newspapers are bound in buckram.

No Profit in Printing Newspapers on Special Paper.

Conceding the failure of the newspapers up to this time to do that which is more or less of an obligation upon them, it should be borne in mind that until recently very little data has been available for ascertaining a standard quantity of printing paper that would endure indefinitely under proper storage. From time to time, the subject has been taken up by newspapers. Several canvasses have been made of the possible revenue to be obtained from such an issue. Apparently, the expenses would far exceed the probable revenue. The purchases would be restricted to the larger public libraries, some college libraries, and some historical societies. I doubt if subscriptions could be obtained for one hundred copies of such a publication. It seems like a dream as a commercial proposition, though some newspaper genius may accomplish such a result some day. A rich institution, or newspaper publisher or philanthropist, like Mr. Carnegie, who has enthusiasm for the accurate historical guidance of future generations, might endow such an effort and make it possible. In any event it lacks the attractiveness of direct profit. The mere cost of the paper would be a bagatelle. One hundred copies of an ordinary daily newspaper upon the terms and specifications of the Government's contract would hardly exceed $2.50 per diem, but the cost of preparing the plates and rolls to meet the varying conditions would carry the total cost to a figure that very few publishers would care to incur as a permanent obligation.

Storage of Newspaper Rolls.

Some newspaper publishers have asked me to gather for them information that will enable them to store newsprint paper rolls under such conditions that will avoid deterioration. The experience in recent years has tended to the belief that paper stored by manufacturers in warehouses near the place of consumption has become so brittle within three months that it interfered with prompt printing of the paper by reason of breaks in the web and increased waste. This brittleness is attributed to the artificial heat or absence of moisture in the warehouses.

100,000 Tons of Print Paper on Hand.

The print paper manufacturers of the United States carry nearly 100,000 tons of newsprint paper, of which the supply at the mill averages 40,000 tons, or 9 days' supply for all newspapers of the country; six days' supply in transit, equaling 27,000; seven days' supply in places of consumption, equalling 31,500; total, 98,500.

This total of approximately 100,000 tons of paper represents a selling value of about $3,500,000. Up to date there is no evidence of any general effort either by manufacturers or by consumers to standardize the method of storage or to improve conditions. Obviously it would be to their mutual advantages to encourage and promote every such effort. The International Paper Co. stores over 1,800 tons of paper in the loft of the big shed at Pier 39, North River, New York. The place is not heated in any way and it is subject to all the variations of temperature and humidity which are incidental to the free play of the air on the river front. Its officers say they can store paper rolls indefinitely in that loft (as much as three years) and deliver the rolls to newspaper consumers in good condition. Their only trouble in storing paper is due to one extra handling, which is, however, less than cartage and storage in a warehouse. Some of the paper is stored in a warehouse

in Franklin Street, New York, in order that the company may not have all of its eggs in one basket. The Chicago Daily News stores 1,000 tons of newsprint paper as a reserve. Eighteen months ago during the pendency of a paper strike, it used 600 tons of paper that had been stored for five years in a cellar that was open to the free play of the atmosphere. The rolls were set upright on strips that permitted ventilation under and on every side. The windows had never been closed in all that period. It is reported that when the stored paper was put upon the presses, it ran better than fresh paper.

New York City uses 750 tons of newsprint per diem. The total tonnage stored in this city is not readily ascertainable. The Great Northern Paper Company carries between 8,500 and 9,000 tons at Pier 42, North River, to supply the needs of its customers. The International Paper Company now has approximately 3,500 tons in storage in its loft and on cars in the city. In Kansas City, the Star carries 2,000 tons of paper. In Brooklyn, the Eagle carries a month's supply.

Experience of International Paper Company in Storing Paper.

Mr. A. E. Wright, vice-president of the International Paper Company, was asked for suggestions for storing paper in the new building of the New York Times. He answered as follows:

"Our experience has taught us that paper stored in a room of fairly even temperature of from thirty to forty degrees, with a free circulation of air at all times, is best suited for the storage of newspaper.

"As you no doubt know, the warmer the air the higher percentage of moisture it carries, therefore we suggest a temperature of from thirty to forty degrees. When necessary to get as low a temperature as this during the summer months, we would suggest some sort of a refrigerating device through which the air would pass before entering the store room. It is well to avoid as far as possible excessive temperature and moisture conditions, and allow for as free a circulation of air as possible.

"We suggest the storing of paper on a ventilated platform fully three inches from the floor, this will allow circulation across the bottom of the rolls.

"As to the effect of light upon paper, we do not think that this has much bearing, as long as the wrappers are left on the rolls. We should say that the most satisfactory place for paper storage would be a basement with windows for ventilation on all four sides. and the paper stored on a platform such as recommended above.

"We feel sure from our experience in storing large quantities of paper in roll form that if our suggestions are followed out as outlined above, very little, if any, change in the character of the paper will be found, after it has been stored for a considerable period."

It should be stated that no one has ever attempted to adopt refrigeration as a method of preserving stored paper rolls.

Vertical or Horizontal Position for Rolls.

Another phase of this matter of storing rolls is the question of carrying rolls in a horizontal or vertical position. Practically all the paper companies and newspapers store the roll vertically because it seems to require less space. The New York Times, in planning its new Annex, has aimed to store over 1,000 tons of paper and to preserve the horizontal position of the roll to avoid the waste and labor incidental to up ending each roll and subsequent throwing of the roll to a horizontal position. In the Government printing office, five men have been observed helping to change the position of a roll.

WATER POWERS OF CANADA

Showing That While the Aggregate of Water Powers in Canada, Potential or Available, is Enormous, Yet There are Difficulties in the Way of Making an Approximate Estimate of Amount of Power Capable of Development

While without doubt Canada possesses a larger amount of potential water power than any country in the world, roughly speaking, perhaps, twice as much as the United States, for example, it would be a very difficult thing to give anything like approximately accurate figures for the quantity available. The Conservation Commission some little time ago published a very valuable book full of data on this important subject, but the compilers recognized this difficulty of giving a true representation of the facts, wonderful as they are, some of the principal conclusions reached by this body in commenting on the subject may be summarized as follows:

First. Water power is dependent, primarily, upon precipitation. Other interests such as municipal and domestic water supply, navigation, agriculture, and irrigation, are likewise dependent upon the same source. The subject of water powers, therefore, can not be properly considered without making fair allowances for the demands of the other interests that have just claims upon water as a natural resource.

Second. Knowledge of the physical circumstances intimately associated with water powers is essential to an intelligent classification of them. It is as unreasonable not to differentiate between water powers as it would be not to differentiate between timber tracts, mineral lands, or the items of any other natural resource varying in quantity, quality and situation.

Third. The accuracy of published data relating to water powers must be accepted with qualifications, unless that data is based upon carefully ascertained facts obtained in the field.

Fourth. General statements, so commonly made, of vast numbers of existent water powers are misleading and tend to disguise the fact that the number of water powers in Canada, at present desirable from an economic standpoint, is much smaller than generally supposed.

Fifth. Reliable data upon water powers have definite characteristics. At the present time, there is urgent need for such data and for detailed topographical maps.

Sixth. Certain steps are necessary to secure water power data that are thoroughly reliable. Metering stations should be established at carefully selected points on the principal rivers and streams, and accurate cross sections of the river beds made at such stations. Permanent benchmarks should be established. A substantial gauge should be erected in an accessible place at each gauging or metering station. Carefully conducted discharge measurements could then be made from time to time during the year, and gauge readings could be taken daily, by some reliable person resident in the locality; or, on the more important rivers, self-registering gauges could be installed. As a result of such procedure, rating tables could be prepared to show the discharges at all stages of the water. Thus, in the course of a very few years, recorded data of fact would be on file, and from such data the maximum, minimum and mean monthly and mean yearly discharges could be ascertained. Furthermore, if the areas of the drainage basins of the respective watersheds are known, and information upon the rainfall is available, important deductions relating to the run-off may be made. If good "common sense" judgment were exercised in the selection, equipment and arrangements for the maintenance of gauging stations much valuable and reliable information could be obtained for a comparatively limited initial outlay and subsequent annual expenditure.

Owing to the paucity of information available respecting water powers in Northern Canada and the northern portions of the various provinces, and, also, respecting many of the minor powers in the settled area, the Commission did not consider it advisable to make an estimate of the total water power in Canada. One "estimate" places it at nearly 17,000,000 h.p.; but it does not, and cannot, rest upon any basis of reliable information.

The information procured would seem to justify the following table showing the total water power developed in Canada in 1910, and the principal industries using it:

Province.	Electrical Energy. H.P.	Paper and Pulp. H.P.	Other Industries. H.P.	Total. H.P.
Ontario*	400,683	57,575	74,008	532.266
Quebec	191,252	76,926	31,975	300,153
Nova Scotia	1,875	12,000	1,397	15,272
New Brunswick	3,400	3,050	3,315	9,765
Prince Edward Island	50	.....	450	500
Manitoba	48,250	.....	50	48,300
Saskatchewan	.....	.....	45	45
Alberta	7.300	.....	.....	7,300
Brit. Columbia	88,145	8.500	4,275	100,920
Yukon	2,000	.....	.....	2,000
Total	742,955	158,051	115,515	1,016.521

*Includes all Ottawa River powers between Montreal and Lake Timiskaming whether wholly in Quebec or in Ontario, or partly in each.

EMPLOYMENT OF CARDBOARD IN RAILWAY CARRIAGES.

According to a report of Herr Reg.-Baumeister F. Gutbrod of Berlin (Z.V.D.I., 1912, page 1663), a cardboard called "Agasot" is being employed in America for lining the sheet-iron Pullman cars, this cardboard being a fire-proof and watertight material, and being manufactured by the Pantasot Co. of New York. A previous trial had been made with aluminum for lining the cars, but this proved to be unsuitable owing to its high conductivity of heat. Between the cardboard and the sheet-iron of the car a narrow layer of air is left, whereby further heat-insulation is obtained. Agasot cardboard 5 mm. thick is directly employed as the lining for the ceiling, the side walls above the window, the bottoms of the beds, the partitions between the beds and the side walls between the seats; it has not so far been covered with upholstery. Agasot has the advantage that it can be pressed into any desired form, can be well and permanently coated with paint, and is of very light weight. By employing this material the weight of the car was reduced from 66 to 65 tons. The chief engineer of the Pullman factory, however, is afraid that, as in the majority of similar articles produced in the United States, the fire-resisting qualities will gradually disappear in consequence of chemical changes in the impregnating material arising from moisture. In any case he by no means considers this new lining to be a final solution of the problem.

Editor's Note.—Recently in Canada inquiries have been received from the Canadian Pacific Railway for a quantity of leather board about ¼ in. thick for lining steel frame box cars in place of the matched wood now used. The present difficulty, however, is the warping properties of most leather board, which can doubtless soon be arranged for.

CHEAP ELECTRIC POWER FOR ONTARIO.

Consumers of power in many parts of Ontario are in line to save a large sum yearly as the result of the recent reduction in power rates by the Hydro-Electric Commission, and users in the Niagara district will benefit immediately by lower distribution rates. The rates of some of the larger cities, such as Toronto and Berlin, have not yet been dealt with, but in a number of cases commercial rates will be reduced by over one-third. Domestic consumers will benefit in proportion, so that all told the creation of the Hydro-Electric system will be attended with almost startling economies to the public in the way of power and light.

A pamphlet which will be of interest to pulp manufacturing interests has been issued by the United States Geological Survey upon the results of measurements on the flow of streams of rivers running to the Atlantic coast. They cover the region extending from St. John River, forming the eastern boundary of Maine, to the Rappahannock River in Virginia, and including the rivers Kennebec, Penobscot, Androscoggin, Saco, Merrimac, Hudson, Delaware, Potomac and Susquehanna. The value of these rivers, not only as navigable highways, but as sources of waterpower, is becoming yearly more recognized.

PAPER MANUFACTURING DEPARTMENT

ICE PAPER.

By James Scott, in Papermaker and British Paper Trade Journal.

The purposes for which ice paper and card can be used are many, and include the manufacture of fancy boxes, picture mounts, calendars and table knick-knacks. Indeed, there are so many directions in which this pretty material is capable of fulfilling a desirable duty that a long list of them could be written. Ice paper can be made distinct from the card, and be afterward glued or pasted to the latter; though in many cases it would be preferable to deal directly with the card, and so save the intermediate trouble and time necessary when ice paper is fastened to card.



Fig. 1—Magnified Pinhole View of a Piece of Ice Paper, Showing the Typical Crystals of Lead Acetate

This substance is obtained by the simple method of brushing a concentrated solution of acetate of lead over the well sized surface of either paper or card, and allowing these to dry while exposed to warm air, the sheets being undetached from one another. Afterward, the surface, when thoroughly dry, is rapidly and evenly overlaid with a film of transparent varnish. These simple instructions will be sufficient to guide the maker who wishes to produce this kind of material; but, as is my custom, I should like to be allowed to amplify somewhat, because I always feel that when a maker is interested—either on account of his own investigations, or through the information conveyed by others—in any goods he prepares, his business is likely to possess for him far more pleasant associations than in cases where orthodox plans are carried out in merely mechanical fashion. Man is a reflective creature, and ought to find interest in knowing something about the substances he uses so widely in the various branches of commerce. To be ignorant of the curious facts bearing upon trade productions, is equal to saying that so long as buyers relieve one of goods, and exchange cash for them, the matter is finished.

This acetate of lead, for instance, which is proposed as a coating for paper and card, is a very peculiar chemical. It is called sugar of lead on account of a sweetish flavor noticeable when a solution is tasted. The compound consists of acetic acid and the metal lead, thoroughly incorporated together. The lead can be removed therefrom in its metallic condition by various methods.

By adding pieces of lead to stale beer or wine, acetate of lead is procurable in addition to other matters.

For commercial purposes, acetate of lead is made by dissolving either litharge (i.e., yellow lead oxide) or the metallic lead in dilute acetic acid. Litharge is made by strongly heating lead. This acetate, when complete, forms what is known as a crystalline solid. It may be obtained in spongy white masses, composed of needle-like crystals of various sizes; also as lumps, in which four-sided prisms may be detected; or as powder, obtained by crushing either of the two forms already referred to. This acetate is used as an astringent medically.

One-seventh of the weight of lead acetate consists of what is known as water crystallization: the reference meaning that acetic acid and lead constitute six-sevenths of the salt, and combined water one-seventh.

It should be pointed out that lead acetate is a poisonous substance, so that great care should be exercised by workmen and others during its use. The results of lead poisoning are so terrible that no trouble to avoid contamination from the compounds of lead should be considered too much. So long as the salt is not allowed to enter scratches or sores on the hands or face, nor dust be breathed as it arises during the handling of the salt, there is not much chance of the workers being endangered by its use; but definite instructions on these points should be conveyed to them in order to avoid risk.

A solution of lead acetate presents a milky appearance. Under the microscope such a fluid discloses multitudes of the tiniest possible specks, these being regarded in some quarters as particles of lead, separated by and combined with the carbonic acid of the water, thereby forming detached carbonate of lead. They are too minute to be filtered off. The quantity of carbonic acid in water varies, rain possessing, as a rule, the largest proportion, drawn from the air during its descent.



Fig 2.—Magnified Pinhole View of Hot Solution of Lead Acetate Allowed to Evaporate

Various crystalline effects may be produced, according to the way in which the acetate or its solutions are dealt with. When either ice paper or card is made the pretty effect of layers of frost covering them is very striking. Even on a white surface the result is very picturesque, as the fine slender crystals are arranged in all manner of positions, and so beautifully catch and reflect the light. When richly colored paper or card forms the basis for the reception of the lead acetate, quite a charming production is insured.

The true form of crystallization for lead acetate is that of a four-sided prism, of the kind shown in Fig. 1. This may be small, or fairly large, according to the strength and quantity of the evaporated solution. At the same time, these prisms may be so elongated, in proportion with their width, as to resemble meres needles, in which case they are named acicular.

In Fig 2 is shown the magnified appearance of a hot solution of lead acetate spread over glass and allowed to cool to a dry film. A less pretty, though somewhat similar, result is obtained when a cold solution is brushed over a slide and evaporated.

One of the strangest features of the crystalline behavior happens when the lead salt is melted. Place a scrap of the dry powder on a strip of glass, heat it strongly, and then find that each speck or fragment liquifies to a transparent substance. When removed from the heat it almost instantly cools, and we see, on magnification of a speck a rosette of the kind shown in Fig. 3.

It is worth mentioning that if a strip or rod of zinc is suspended in a glass jar containing a strong solution of lead acetate the lead will be extracted and deposited upon the zinc in the shape of glistening particles, beautifully arranged in tufts, the whole sight resembling a small tree made of metal. Such objects used to be sold as chemical curiosities a few years ago. Some idea of this matter can be got by inspecting Fig. 4, which is on a light ground.

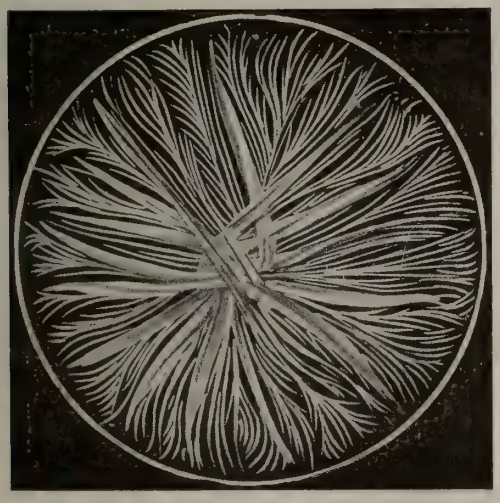


Fig 3.—Magnified Pinhole View of Tiny Piece of Lead Acetate Melted and Quickly Cooled

These facts ought to make the manufacture of ice paper more interesting than they would otherwise be.

A few points may need emphasizing. In the first place the better the paper or card used as basis happens to be the more successful is likely to be the final production. Great care should be taken to see that the material is thoroughly dry before the varnish is applied, because the two things, water and varnish, have a natural antipathy to each other. If the paper or card is damp when varnished the latter will get streaked, spotted or otherwise spoiled. The varnish is, of course, intended to fix the salt.



Fig 4.—Magnified Pinhole View of a Scrap of Zinc Removing Metallic Lead From Solution of Lead Acetate—Instantly Withdrawn in the Form of Ferns

It should be remembered that a very strong and hot solution of the lead acetate is required; otherwise only a filmy, almost indistinguishable, figuring will result from the operation. By using the solution hot and very highly concentrated the maker will be enabled to produce a paper or card that is sure to attract attention whenever seen.

DISTRIBUTING THE SIZE.

It is not at all uncommon to find insufficient or unsuitable provision for distributing the rosin size to the various beaters. Such arrangements are messy and wasteful as regards the spilling of the size, and moreover involve a considerable expenditure of time and labor. In a properly designed mill, the size boiling house will be two storeys higher than the beater room and will be constructed entirely of masonry. The storage tanks for the dilute size-milk will occupy the storey between the size-boiling house and the beaters. These tanks should be of ample capacity, constructed of cement, and the size should flow directly from them to the measuring tanks at the beaters. Each measuring tank should supply two beaters, the discharge pipe being attached to a swivel which can be turned over either engine. The measurement of the size by a float and pointer is not recommended, it is much better to have a glass gauge-tube with a legible scale in red and black behind it. The discharge pipe should be fitted with a woollen bag to strain the size. In mills where the size boiling house cannot be erected at a sufficient height above the beater room, endeavor should at least be made to find head-room for the size storage tanks. Failing this, the measuring tanks themselves might take the place of storage tanks and the size pumped up to them by means of a pistonless, slow-speed diaphragm pump. Injectors and other kinds of pumps are objectionable on account of froth.

DETECTION OF COLORING MATTERS IN PAPER.

If a mineral pigment has been used, it will remain in the ash in which it may be identified by well-known tests. With aniline dyestuffs the ash is white and the dye must be extracted from the paper itself. A piece of the paper weighing about half a gramme is folded in a ziz-zag and boiled successively with water, alcohol, glacial acetic acid and ammonia, the extracts obtained from each treatment being set aside in separate tubes, and subsequently concentrated by evaporation. In order to test whether the extracted dyestuffs are acid or basic, a shred of woollen yarn and a piece of cotton mordanted with tannin and tartar emetic are digested together in the same solution. If the cotton is dyed the coloring matter is basic, but if only the wool is dyed an acid color is present or else a substantive dyestuff. The substantive dyestuff may be recognized by adding some Glauber's salt and a piece of unmordanted mercerized cotton; this will absorb substantive dyes but not acid dyes.

But there are other organic coloring matters besides those belonging to the three classes mentioned. For instance, the pigment colors, which are insoluble in water but will generally appear in the alcoholic or glacial acetic acid extracts of the paper. An exception is lampblack, which is insoluble in everything, but may be detected by boiling with sodium hypochlorite; it is the only black organic pigment which will resist this treatment. Another exception is Indanthrene blue, which also is insoluble in the extracting liquids mentioned above. This may be recognized by pulping up some of the paper with weak caustic soda, making a cake of the pulp, drying it and touching it with a drop of 40 per cent. nitric acid. In the case of indanthrene blue, this acid forms a white spot which becomes blue again on steeping in a solution of stannous chloride.

Of the natural vegetable coloring matters, log-wood and fustic are still occasionally used. Log-wood is dissolved by glacial acetic acid giving a yellow solution which becomes dark bluish-red when water is added. If ether and stannous chloride are added the solution turns magenta colored. Fustic behaves almost in the same way, but the watery layer becomes more strongly yellow in color, whilst in the ethereal layer a greenish-yellow fluorescence is formed. Quercitron dissolves in boiling water with a pale dirty color which becomes bright yellow when alum is added. Catechu dissolves in alcohol and gives a green or greenish-brown coloration with ferric chloride. Alizarin, or madder, is extracted from the paper by glacial acetic acid giving a yellow solution. The extract is divided into two parts and ether is added to each. Stannous chloride is added to one portion and the color should remain unchanged; caustic soda when added to the other portion should turn it bluish-violet.

The newer type of artificial organic pigment colors, such as the Lithol, Hansa and Helio paste colors are extracted by alcohol or acetic acid, but are precipitated again when the solvent is evaporated. Eglantin, which is also a pigment color, may be recognized by the fact that when warmed with benzene it gives a solution with a brown fluorescence. Further, there is a series of Indanthrene colors, yellow, green and violet; these all become blue when boiled with hydrosulphite solution.

CHEMICAL REACTIONS IN PAPER SIZING.

The first reaction for which alum is required is the neutralization of the temporary hardness of the water. When alum is added in excess to a hard water a precipitate is formed which is constant in quantity and composition, until the amount of alum exceeds seven times the theoretical equivalent of the lime actually present. When as much as nine times the necessary amount of alum is added no precipitate is formed at all. With any reasonable excess of alum the precipitate produced consists of a basic sulphate of alumina containing 70 per cent. of Al_2O_3 and 30 per cent. of SO_3, as compared with the original sulphate of alumina containing 30 per cent. of Al_2O_3 and 70 per cent. of SO_3 calculated on the dry substance. Thus the ordinary chemical equation: $Al_2(SO_4)_3+3Ca\ (CO_3H)_2=Al_2(OH)_6+3CaSo_4+6CO_2$ does not hold since only four-fifths of the total alum used are active. Hence to neutralize 10 grams of CaO in the form of bicarbonate, 50 grams of alum must be reckoned instead of 40 grams as indicated in the above equation.

The second function of the alum is the decomposition of the resin size, or rather that portion of it which is in neutral combination with soda. Dr. Neugebauer has made experiments with dilute solutions of neutral size and alum in various excessive proportions. He finds that the precipitate produced always consists of a mixture of about one-third free resin and two-thirds basic aluminum resinate. The actual proportions of free resin and resinate vary according to the amount of alum used in excess, from 31 per cent. of free resin with a slight excess of alum to 41 per cent. of free resin with an excess of twelve times the requisite quantity. The free resin can be separated from the basic aluminium resinate by dissolving it in alcohol of 0.8773 specific gravity. This alcohol, which is of only 75 per cent. strength, will dissolve free resin but not the resinate. The resinate, which is soluble in ether, contains about 3.9 per cent. of aluminium and corresponds to a basic aluminium resinate of the formula Al_2OR_4 (where R represents resin acids of molecular weight 353).

The proportion of free resin in the sized pulp will consist of the free resin in the size used plus one-third of the combined resin of the size, whilst the remaining two-thirds will exist in the pulp in the form of basic aluminium resinate. The proportion of free resin in the finished paper will depend on the yield on the paper machine. It may be estimated by extracting the paper first with 75 per cent. alcohol, which removes the free resin, and then with ether which extracts the resinate. Various papers thus analysed were found to contain from 50 to 75 per cent. of their total resin in the form of free resin.

RECUPERATION OF PULP FROM WASTE PAPER.

A French patent, No. 444,708, has been granted Mr. Burly, of United States, for treating waste paper, during or after its transformation into pulp, with a solution of not more than two parts by weight of caustic soda, or its equivalent of some other alkali, to one thousand parts of water, heating the mixture to 145 degrees Fahr. The pulpy mass is afterwards steeped and washed in fresh water ,all impurities being thus removed.

In place of caustic soda, a solution of borax kept at boiling point during its action upon the paper may be used. A variation of the process would consist in treating the old paper with a solution of bicarbonate of soda, heated to a temperature above its boiling point; treatment with fresh water completing the operation.

PULP MANUFACTURING DEPARTMENT

PAPER PLANT INVESTIGATION BY THE U. S. DEPARTMENT OF AGRICULTURE.

(Written Specially for Pulp and Paper Magazine.)
By Raleigh Raines.

In the search for fibres that may serve as substitutes for wood in the manufacture of paper, special attention has been given to a continuation of the studies of corn stalks, broom-corn stalks, and rice straw, by the Department of Agriculture during the past year. Congress has repeatedly provided appropriations for conducting experiments in paper making from these and other fibrous plants in the hope that a profitable way or method might be discovered of utilizing these and other waste material. For the current fiscal year congress has provided the sum of $22,590 for fibre plant investigations and for testing and breeding fibrous plants, which includes the testing of flax straw for paper making, which experiments are now in process of development by the paper experts of the department. The numerous lots of materials collected or grown for use in the laboratory and mill experiments included three car loads of carefully harvested corn stalks for food extract production and a ton of papyrus tops imported from Palestine. As a result of the work accomplished, the conclusion has been reached that materials better suited for special purposes must be discovered rather than something cheaper than those now in use. In line with this conclusion, more emphasis will be placed by the department in the future on the production of crops especially adapted for paper making.

Among the digestions made in the laboratory of the department in Washington have been those of sugar cane pith (a by-product of the diffusion process of sugar making), nolina texana a yucca and sotal relative, vetiver grass a plant which yields a soap scenting material, flax straw, castor-bean stalks, palmetto leaves, hop vines, and papyrus. An attempt is now being made to work out a method of cooking specially suited to each material. Preliminary tests which promise well have been made to determine the suitability of hemp pulp, produced by the soda process directly from retted stalks. Hand made sheets are prepared from all pulps, and a special pulp screen has been devised which greatly facilitates the work. In all laboratory digestions determinations are made of optimum steam pressure, per cent. of cooking reagents, and yields of fibre.

During the year, fifty-four cooks of soda pulp have been made. Rice straw has proven a very promising material, but the problem of soda recovery remains to be worked out, or methods of cooking must be devised which will render recovery unnecessary. Rice root grass tops, a waste product of the zacaton root-brush fibre industry, have yielded an especially promising pulp, closely related to that of poplar. The hemp materials are also especially promising of good results. The corn-pulp yields were the most satisfactory thus far obtained. Pith pulp experiments have not been consummated, but will be continued with the view of manufacturing paper specialties. Sixteen corn stalk extractions were made in large rotary digesters of 3,000 pounds capacity. The purpose of these experiments was two-fold; they were conducted in co-operation with the bureau of animal industry, which used the extract in feeding eight milch cows. Between eight and nine hundred gallons of extract were produced, containing about forty per cent. of solids. In connection with the production of extract a large quantity of pulp was produced, and a test of the resistance of corn stalk pulp was carried on with this material. It was stored wet and unbleached in a drainer and wet down from time to time. After eight months of wet storage, paper of good quality is still being produced from it. The stored pulp has been found to bleach more readily than that worked up immediately after cooking. During the ensuing year especial attention will be given to flax straw investigations under the provisions of the agricultural appropriation bill which contains an item of $12,580 for that purpose.

It is the hope of the department that the investigations will develop suitable methods of handling the raw flax straw, and of cooking and bleaching same. Hemp stalks both retted and unretted, and hemp wastes, will receive attention. Other work will include a study of the individual variables in the cooking of different materials and a critical comparison of the celluloses obtained from them. Tests will be made of corn pith for making various pulp products, diffusion methods of extracting food by-products, and soda recovery from rice straw liquors. Extensive field work with flax, hemp, esparto and other plants will also be prosecuted.

The investigations of plant fibres have received especial attention and an exhibit made at the first world congress and exposition devoted exclusively to paper plant fibres. The great interest manifested in an almost universal desire to extend human knowledge of plant fibres, was clearly demonstrated at the exposition where the great collection of plant fibres, the fine display of fibre cleaning machinery in operation, and the daily conferences of men especially interested in fibre producing plants from all parts of the world afforded exceptional opportunities for gleaning valuable and accurate information and for exchanging same. Of the hard fibres, about 3,000 of the agava cantala, the most promising fibre agave of Java and the Philippines, have been introduced and set out in co-operative trials in Porto Rico and on the Florida Keys. Henequen, sisal and zapupe plants set out in Porto Rico in former years are flourishing, and many of them are now ready to yield their first harvest of leaves. After extensive experiments with hemp, it has been successfully demonstrated that the crop can be profitably grown in Wisconsin and that the fibre can be prepared in a satisfactory manner with machinery. The interest aroused by these experiments has resulted in about 200 acres of hemp being planted in that locality this season. While the department has been conducting experiments with flax for some time the work of breeding flax for the development of improved strains for both fibre and seed

are being prosecuted, and laboratory tests indicate a distinct improvement in the third generation of selected plants. In addition to these experiments others are being conducted regarding the deterioration of fibre strains of flax from American grown seed in the State of Minnesota. Many requests for information about ramie have been received by the department, and in order to supply the detailed information a circular has been prepared dealing with the experiments in the cultivation of ramie under irrigation in California. The crops of leaves of sisal, henequen, and zapupe will be harvested when ready in Porto Rico and the Florida Keys, and a study made of the relative merits of several different kinds of hard fibre plants introduced there. Efforts will be made during the coming year to induce farmers to increase the cultivation of flax to supply the increasing demand for flax seed, much of which is now imported, and a great amount supplied free by oil mills to farmers. On the whole the work outlined by the department in the line of experiments and investigations of paper plants promises to furnish valuable results for the use of the paper and cordage trades.

TESTING THE PURITY OF CELLULOSE.

For testing the degree of purity of wood cellulose—i.e., estimating residual lignin, the following methods are suggested:

Treatment with chlorine gas and titration of the hydrochloric acid formed, the absorption of iodine from a standard solution, and the Hempel-Seidel method. The chlorine method is influenced by light and it is difficult to remove the last traces of chlorine; the results of the iodine method are influenced by the hardness or softness of the pulp; on the other hand, the Seidel method gives concordant results and is considered to be the best. It consists in digesting the cellulose with nitric acid (13 per cent. HNC3) at 98 deg. to 100 deg. C., collecting and titrating the nitrous gases produced in the oxidation of the lignin.

The following modifications of the original Seidel procedure were found to be desirable; 5 Gm. of the sample should be treated with 100 Cc., of the acid, instead of with 50 Cc.; the time taken for heating up to 100 deg. C. should always be the same, viz., 15 minutes and the water-bath should be maintained at the boiling temperature for 60 minutes. Owing to the formation of a mist of acid when the temperature reaches about 70 deg. C., the author has slightly modified the apparatus.

A long-necked distillation flask with the side tube high up is used and a suitable condenser is inserted down the neck and fixed there, with rubber or pulp; the condenser should occupy as much space as possible in the neck of the flask and a glass tube should pass through the centre of it for the introduction of air.

The samples to be tested must first be freed from resin by extraction with ether, then with alcohol, and, lastly, with water. With extracted spruce wood raspings the best result was obtained by treating about 3 Gm. of the wood with 100 Cc. of the acid. The yield of nitrous acid was 1.076 Gm. calculated as N_2O_3, per 10 Gm. of dry and ash-free wood, and this value is taken as a standard, equivalent to 28 per cent. of lignin. From this standard the percentage of lignin may be calculated from the nitrous acid formed by the treatment of any sample of wood cellulose; typical samples showed from 2.0 to 3.5 per cent. of lignin, the results being complimentary to the yields of cellulose by chlorination; 20.1 per cent. of lignin was found in jute.

The method is quite satisfactory for technical purposes, whereas Klason's colormetric method with sulphuric acid often gives contradictory results with samples of different type and manufacture. Seidel's method has also been used for the determination of mechanical wood pulp in papers.

CANADIAN PRODUCTION OF SULPHITE PULP.

U.S. Consul J. G. Foster reports to his Government that he has obtained the following figures concerning the quantity of sulphite and chemical pulp manufactured in Canada in 1912, compared with 1907:

According to his statement, there is now 40 per cent. less sulphite produced for sale in the Canadian market than there was five years ago, or, including the sulphate pulp, the present production for sale is 20 per cent. less. The mills' daily production for sale is given as follows, the mills starred being users of sulphite pulp in their own paper manufacture. The amounts given for these are surplus productions.

	1907. Tons.	1912. Tons.
Riordon, Hawkesbury	90	100
Riordon, Merritton	30	20
*Booth	..	5
*Sault Ste. Marie	65	15
*Sturgeon	25	15
*Laurentide	35	20
*Eddy	5	0
*Jonquiere	3	0
Dominion	20	20
Mirimichi	50	0
Cushing	40	40
St. John Sulphite Fibre Company	30	10
	393	235

The history of sulphite making in Canada has, he says, in the past resulted unfavorably to some of the mills. The business, however, is now profitable and increasing in volume, but it is not likely to increase in production much more rapidly than the Canadian demand for sulphite pulp.

The amount of unbleached chemical pulp now being exported annually to the United States from Canada for sale is said to be between 40,000 and 50,000 tons, the balance of the export being destined for paper mills owned by the companies producing the sulphite pulp. It is claimed that the amount of Canadian sulphite exported to the United States for sale in the open market is less than it was a few years ago, while European shipments of this character to the United States have increased very materially.

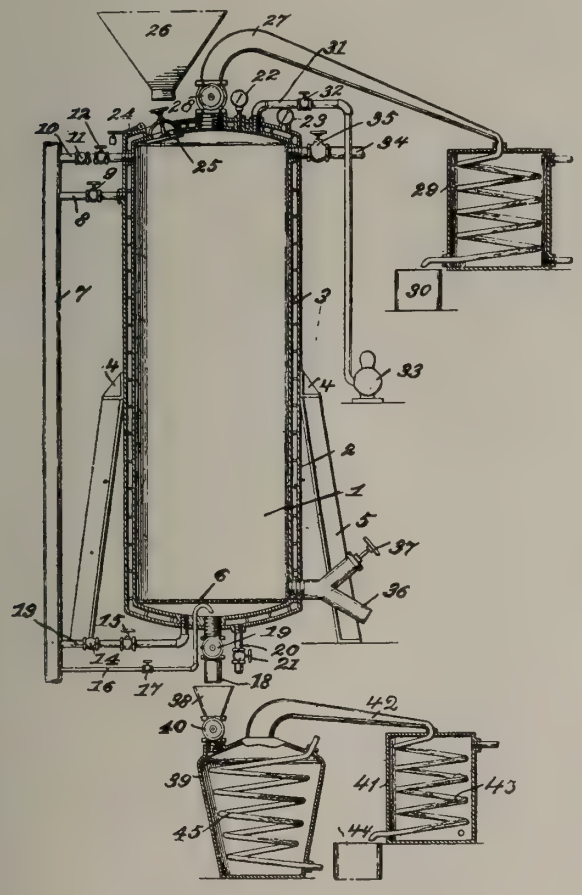
Attention should be given to the upkeep of boiler mountings. Some firms follow the excellent practice of keeping a spare set, so that any defective fittings may be replaced. This reduces the inconvenience due to stoppage, and at the same time removes the temptations to continue their use until they become positively dangerous.

METHOD OF MANUFACTURING CELLULOSE FROM RESINOUS WOOD

With Reclaiming of Turpentine and Rosin, Which Separate Out When the Wood is Heated in a Closed Vessel, After Which the Cellulose is Prepared by Continued Heating and Mixing With Alkalis.

By B. F. A. Saylor, Rome, Ga.

Pine or spruce wood is chipped in small chips, about half an inch long and one-eighth to one-quarter of an inch thick, and charged into the cylinder 1, until nearly filled. At the same time about one and a half ounces of dry caustic soda is added per cubic foot. The man-hole cover 25 and the valves 12, 28, 19, 35, 17 and 37 are then closed, and the valve 32 on a pipe connected out with the jacket and the lower part of the cylinder 1, are somewhat opened. Some steam under a low pressure is then let in, and the vacuum pump 33 started, until practically a complete vacuum has been obtained in the cylinder 1.



The evacuation of the air from the interior of the cylinder, before it has been heated more strongly, prevents the carbonizing of the chips and the discoloring of the turpentine and rosin.

As soon as a complete vacuum has been obtained in the cylinder 1, the valve 32 and all outlets from the cylinder are closed, and the valves 9, 12 and 15 opened so that steam enters into the jacket and into the cylinder, until a pressure of 80 to 105 pounds has been reached. This is continued for about one hour, during which time the turpentine separates out from the wood and the molten rosin collects on the bottom. The valve 28 is then opened and the heating continued for two hours more. During these two hours turpentine and steam together pass through the pipe 27, are condensed in the condenser 29, and collected in the receiver 30, where they are separated in the usual way.

The valves 28 and 15 are closed after about three hours of this treatment, but the valve 12 is left open. The valve 19 on pipe 18 is opened and the steam pressure presses the rosin, which has collected under the false bottom 6, through pipe 18 into the funnel 38, from where it passes into the rosin retort 39. The valve 12 is then closed. About two-thirds of the rosin remain in the wood after this treatment.

The wood in cylinder 1 is now transformed into cellulose in the following manner. The valve 19 is closed after the first collected rosin has been let out through the pipe 18, and a solution of caustic soda of 15° Be. under a pressure higher than the pressure in cylinder 1 pressed in through pipe 34. Enough of this solution of caustic soda is introduced to cover the chips. The valve 35 is then closed and the valves 12 and 15 opened, and steam let in into the cylinder 1 and into the jacket, until the pressure has reached about 125 pounds. This pressure is kept up for about five hours, during which time all valves on the cylinder, except the steam valve 12, are closed.

Soon after the pressure in cylinder 1 has been increased the valve 28 is opened for a short time and the remaining turpentine blown off. The pressure of 125 pounds is kept up in the cylinder until the wood has been transformed into cellulose. The rosin collects under the bottom 6. The valve 19 is opened after one and one-half hours, and all rosin let out through pipe 18, after which the valve 19 is closed.

At the end of this treatment which lasts for five to six hours, the wood is completely changed into cellulose. The valve 15 is then closed and the valve 19 opened for a short time. The pressure in cylinder 1 then forces the lye out through pipe 18 into a container, from where it is taken into an evaporation apparatus treated in the well-known way. The valve 19 is then closed, the valve 37 opened and the cellulose blown off through pipe 36.

The whole process lasts about ten hours.—B.

Press rolls of granite have, during the last years, been substituted with advantage for cast-iron rolls, with or without a metal lining for paper machines. The advantages of the granite rolls by reason that the paper does not stick to them, and their resistance and strength, etc., are generally known. Granite rolls, however, sooner or later wear to an uneven surface, because the rock is not homogeneous enough, and because mica, one of its constituents, has but little resistance against friction. Porphyry is evidently a better material for press rolls.

FORESTRY DEPARTMENT

DOMINION FORESTRY POLICY.

(By R. H. Campbell, Dominion Director of Forestry.)

The Forestry Branch of the Department of the Interior has developed a well organized system for handling the forest resources of the Dominion which are under its administration and for investigating the whole question of forestry as it affects Canada in general.

Up to the present time one difficulty in the way of rapid development has been the lack in Canada of men who have had technical training in forestry. Little progress can be made without a fair proportion of men in the service who have had the advantage of the study of forestry methods from the scientific standpoint, and who, therefore, understand the lines upon which advancement must be made and the ultimate purposes which the administration must have in view. The difficulty is now being overcome by the forest schools established in the Dominion, which are graduating each year a number of men who should fill this gap in the administration. The Forestry Branch of the Department of the Interior has so far furnished the chief openings for these graduates, and there are now on the staff 20 technical men.

The exploration of the public domain in order to ascertain the extent and present conditions of the forests to hold permanetly in national forests the non-agricultural lands is an important side of the work, and a first necessary step for the establishment of a permanent forest policy. Consequently, six parties were detailed for this work during the past year in Keewatin, Northern Manitoba and Saskatchewan, and in Alberta and the Railway Belt in British Columbia, and these have added much to our knowledge of the forests, and defined extensive additional area that should be held for forest purposes.

The protection of the vast extent of northern forest is a task of great magnitude. The belt of land, more or less forested, stretching from Hudson Bay to the Rocky Mountains, covers a distance of 1,500 miles from east to west, and from 300 to 700 miles from north to south, and, with travel, railway construction and settlement steadily working into it from all directions, the danger of fire is great and constant. On the whole, the staff of rangers patrolling in these districts is of a good class, but the number so far employed, 200, is utterly inadequate to the task when the season is at all dangerous.

One of the weaknesses of the fire ranging outside of the reserves has been a lack of proper inspection to determine what districts shall be patrolled and how the patrols of the rangers shall be arranged to ensure that the patrol is being carried out fully. During the past year an organization for better inspection has been provided and improved the service very much. The patrol along the railway lines by the companies as provided for by the Railway Act, has been put into force during the past summer under the inspection of the Forestry Branch and has resulted in greatly improved conditions.

The lumbermen in the West have not heretofore taken as live an interest in the protection of the timber from fire as the investments that they have in timber limits would seem to justify. A more active participation by the lumbermen in the system of protection should lead to better results, and, without their co-operation, it is difficult for the Department to accomplish all that should be done. A scheme for co-operation by the lumbermen in this work should be heartily welcomed.

The organization of the permanent forest reserves so as to make them fireproof and to provide proper management is work that requires a good permanent staff and a system of permanent improvements, such as forest ranger stations, trails, roads, bridges, telephone lines, etc. As the forest ranger staff is the groundwork of all the organization for handling the reserves, the choice of the right kind of men is a factor of the greatest moment. The improvement work above referred to as required on the reserves is necessary if there is to be effective protection and management, and as all this work is yet to be done it will be seen that there must be a large initial expenditure which cannot be expected to be returned by the forest immediately. The work on permanent improvements is, in fact, a capital expenditure, and should be considered as such. A proper system of roads, trails, buildings, etc., throughout the reserves will cost a large amount of money, the incidence of which should be distributed through a series of years. These works, once done, will require a comparatively small expenditure for maintenance, in addition to such work as may be done by the permanent ranger staff. So long, however, as this work remains undone the forests are exposed to danger which cannot be coped with in seasons of light rainfall, and which renders much of the expenditure that is being made for fire patrol finally nugatory, as the history of the dry years so eloquently testifies.

It must be expected, therefore, that the expenditure on the forests for a considerable period will exceed the revenues. A permanent policy, in the present condition of our forests, cannot be worked out on any other expectation. The waste of years of unchecked fires cannot be repaired in a day. When the fire danger has been eliminated and proper system of cutting timber introduced, the condition of the forests will steadily improve, and finally will reach the stage where a sustained annual yield can be obtained which will give revenue sufficient to cover the costs of administration and furnish as reasonable a profit as a Government would be expected to obtain.

The collection of statistics in regard to forest products is an important corollary to the other work of this Branch. Previous to the starting of this work by the Forestry Branch, in 1908, there were no reliable records of the yield of the forests of Canada or of the value of the forest as a producer of wealth and a support of native industries. These reports, combined with the export and import returns of the Department of Customs, have revealed our strength and our weakness. They show an annual value of Canadian forest products of $166,000,000, second only to the agricultural production; that, as far as pulp wood is concerned, Canada is the greatest producer and supplies

not only Canadian requirements, but a large part of those of the United States, but that as far as the more valuable woods are concerned, especially hardwoods, the supply is steadily approaching the point of exhaustion, and, in most hardwoods, has already practically reached it. A strengthening of the staff handling this work would make the reports still more valuable and useful.

A further development that would properly round out the natural work of the Forestry Branch would be the investigation of waste in the forest and in the manufacture of wood and experimentation in new processes to prevent waste. Unquestionably one of the developments in the direction of economy must be in the elimination of waste outside the forest, as well as inside. The drain upon our wood supplies will become so great that they must not only be protected when standing in the forest, but must be followed all along the line of use and made to spread as far as possible both in quantity and time. The work of the Forestry Branch cannot be considered complete until it can follow the products of the forest through this whole cycle and assist in economizing them to the end. Provision for investigations on the lines indicated should be made without delay.

ONTARIO COMMISSIONER OF FORESTRY.

As stated in the last number, Prof. E. J. Zavitz, well-known in connection with the Ontario Agricultural College and with forestry work in that province, has been appointed Forestry Commissioner for Ontario—a new position in the Department of Lands, Forests and Mines.

In this office Prof. Zavitz will advise the department with regard to all matters of cutting, and no lumbering operations will in future be allowed without his recommendation. He will see to the destruction of debris and slash from lumbering, and will also deal with reforestation and conservation all over the province. Prof. Zavitz's work is well known in connection with the reforestation and conservation scheme in Norfolk County, where some 1,500 acres of waste land are being reclaimed by the Department of Agriculture, which work, however, will likely be turned over to the new branch. Considerable reorganization will immediately be carried out, at the conclusion of which the Government will extend the work of reclaiming waste areas. Particular attention will be paid to forestry work in Northern Ontario.



Prof. E. J. Zavitz
Ontario Commissioner of Forestry

FORESTRY WORK IN BRITISH COLUMBIA.

It gives but a slight indication of the extraordinary amount of forestry work to be done in British Columbia to state that the province is heavily timbered, is 700 miles long by 400 wide, and that the actual work covers an area of something like 130,000,000 acres.

At present very little is known about most of the province, and this information is held by a number of surveyors, prospectors, hunters, trappers, and others, who are difficult to find and who when found cannot usually describe the country in the manner wanted by the Forest Administration, and have never looked at the country from the Forester's point of view.

In addition, very little of the province has been surveyed. The coast line, international boundary, railways, patches of settled land in different parts, the Dominion Railway Belt, a few areas surveyed by the Geological Survey of Canada, and some of the leased and licensed timber areas are about all that has been done.

The work has been carried out by a large number of different agencies and is linked up by no triangulation of the country or system of townships.

All this makes the collection of reliable data much more difficult, and without such data it is impossible to organize the province by districts for forest administration.

The aim of the energetic men who are undertaking the work in British Columbia is to have at headquarters a map and a well arranged store of information from which to see what land is timberland and what not timbered, according to the definition contained in the Land Act of British Columbia, which says that timbered land is land bearing 8,000 board feet or more to the acre in the country west of the Cascades and 5,000 board feet or more to the acre in the country east of the Cascades.

The timbered land again may be good, medium or poor, so we want to know roughly what the stand is in each part of the country.

It is not the desire at present to make a close cruise, as it would serve no good purpose and be a waste of time and money, so they are contenting themselves with an ocular estimate showing classes 0-5000, 5000-10,000, 10,000-20,000 and 20,000 board feet to the acre and up.

In every other country that has carried out a reconnoissance of its forests there has been some system of surveys on which to base the work over the greater part of the area, but British Columbia being a new country the difficulties are immensely increased, and there is nothing for it but to tackle the work and conquer the difficulties as they arise.

THE WOOD REFUSE PRODUCER GAS PLANT

By E. B. Archibald, B.Sc., A.M.A.I.E.E.

A new type of power plant is coming very rapidly to the front in the name of the "The Wood Refuse Producer Gas Plant," which should be of interest to many of the large lumber, furniture and other manufacturing concerns in this country, having no end of wood refuse and cheap timber at their disposal.

This type of plant can be run on such fuels as shavings, wood blocks and all kinds of wood refuse, and should find a large field in the future in localities where the supply of wood can be obtained at a minmum cost, and where the cost of coal is almost prohibitive, due to the heavy transportation charges incurred in its travel from the base of supplies.

The standard type of suction gas plant to-day suitable for use with gas coke or anthracite fuel has an extremely small consumption, yet in many cases this fuel is very costly, and is subject to rapid fluctuations, which is chiefly true in isolated places. This has led many engineers to consider the design of a plant which would be suitable for saw mill engineers and others to obtain power for driving their machinery from unsaleable wood refuse. The question of disposing of wood refuse in timber and other trades economically, is one of the important questions that needs careful consideration.

From the following remarks one will see a few of the main principles underlying the design of a wood refuse producer gas plant, and it will be found that it is much the same as in the case of a suction gas plant operating with anthracite as a fuel. There will, however, be found the following principal points of difference with regard to the wood refuse plant, as compared with an anthracite plant.

1. No vaporizer or steam boiler is required, the necessary steam required for enriching the gas and keeping the producer temperature down is derived from the moisture found in the fuel itself.

2. A centrifugal washer is provided for the purpose of removing all tarry matters and impurities from the gases.

Brief Description of Operation.

On the suction stroke of the gas engine, a vacuum is created throughout the plant and in the pipes connecting the plant with the engine. Air is then drawn into the generator below the fire grate, and then passes through the hot fuel causing chemical reactions to take place, thus forming a combustible gas. The gas thus generated passes from the top of the generator into a dust collector box, and thence to the bottom of the coke scrubber. Passing upwards through a body of coke which is saturated with water, the gas then passes through a centrifugal washer, and is freed from all tarry matters. From the washer the gas finally passes through a sawdust scrubber before being allowed to enter the engine.

Special Features in Connection With This Plant.

No chances are taken in the fuel feeding arrangements. Very satisfactory results are found in using a positive feed valve which prohibits any excess air to pass into the producer, while the operation of feeding is in progress. In this case a balanced plate valve is attached to the hopper on the top of the producer, so designed to prevent light fuels becoming blocked in the hopper, and thus protecting the generator.

In many cases there is a great tendency in wood refuse plants in the pipes between the generator and scrubber becoming clogged with tarry matters and sawdust. This tendency has been overcome in the wood refuse plant manufactured by Davey, Paxman & Co., of England. In their producer a dust collector box of special construction is placed between the generator and scrubber, so arranged that gases in passing through the same are brought into contact with jets of water, which both cleans and cools the gas, and also keeps the gas passages free from deposits. Should any sawdust be drawn over, it is washed down, and is deposited in the seal pit.

The coke scrubber and sprayer is similar to that used in an anthracite plant. The sawdust scrubber is large enough in design to prohibit any undue suction on the engine.

The chimney pipe is attached to the top of the producer, and can be closed by means of an air-tight cover on top of the pipe. Poking holes are arranged in suitable positions throughout the plant.

The following data gives an outline of a test made on an installation of the above type manufactured by Messrs. Davey, Paxman & Co., Ltd., England.

The plant experimented upon was connected to a gas engine rated for a continuous load of 36 h.p.

Fuel Used.

A shipment of cocoanut shells from Ceylon crushed down approximately to pieces of 2-inch to 3-inch square. Fire was laid with wood wool, and shavings to level of fire doors, then fuel was fed in up to level of hopper top.

First Day.

Time.	Remarks.
10.05 a.m.	Lit fire and commenced to blow on hand fan.
10.20 a.m.	Gas lit at engine.
10.22 a.m.	Engine started.
10.25 a.m.	Commenced to put load on engine.
10.38 a.m.	Full load being carried by engine and maintained until 4.45 p.m.
4.45 p.m.	Engine shut down.

After shutting down the engine, the gas and air valves were removed. No tar was found upon the valve seats.

Plant Opened Out.

The fire was found to be in good condition and no clinker could be seen on the bars. There was no difficulty in getting a poking tool through the grate bars and right across the body of the fire; this fact indicates that very little clinker could be present after the day's run.

The dust box and gas passages were practically as clean as they were before starting the plant. A considerable quantity of tar was washed out of the gas, both at the dust box and in the extractor.

The fuel was not drawn out of the generator at the end of the day's run, but the chimney pipe was left open overnight so as to keep the fire alight ready for running on the following day.

Second Day.

Fire already in generator, after being banked up all night.

Time.	Remarks.
7.35 a.m.	—Commenced blowing on fan.
7.43 a.m.	—Gas lit at engine.
7.45 a.m.	—Engine started.
7.48 a.m.	—Commenced to put load on engine.
7.55 a.m.	—Full load being carried by engine and maintained till 6.15 p.m.
10.15 a.m.	—Supply of fuel exhausted. Generator then filled to level of hopper top.
6.15 p.m.	—Engine shut down.

The gas and air valves on the engines were examined, the valve spindles and seats were found to be quite clean.

Plant Opened Out.

The dust box and gas passages were still clean, as at the end of the first day's trial.

Fuel Consumption.

From the rough tests which were able to be made it was found that 3½ lbs. of fuel had been used for every b.h.p. which was given off at the engine, including the fuel consumed whilst the plant was banked up overnight.

Water Consumption.

The figures given hereunder, cover the whole of the water required for the plant. (Coke scrubber, tar extractor, and spray pipes in dust box, etc.)

The quantity of water consumed worked out at four gallons per b.h.p. hour. A liberal feed of water was given to all points of the plant, as it was deemed advisable to place the latter under the best conditions as far as the water supply was concerned, in order to determine whether entire elimination of the tar was possible. In order to produce the necessary spraying effect, a certain quantity of water would always be required through the plant, quite regardless of the quantity of gas which might be passing, therefore in a plant of larger size the water consumption per b.h.p. hour would be considerably lower than was the case with the comparatively small plant now under consideration.

General Remarks.

The fuel packs well in the generator, and the attention required is very little more than would be needed by a plant working with anthracite as fuel. Upon referring to the log of the second day's run it will be noticed that no fuel was fed into the generator after 10.15 a.m., but that the engine continued to run till 6.15 p.m. In other words, the engine ran for eight hours without any stoking of the gas plant, and no poking whatever was done after 2.45 p.m. This means that the plant ran without any attention for 3½ hours. Three-quarters of an hour before shutting down the plant on the second day of the tests, the engine was tried with about 10 per cent. overload, and carried the same for several minutes, although the fire in the generator was by this time rather thin.

The above mentioned plant has been worked with wood, blocks, chips, shavings, bark, twigs, tanbark and sawdust.

When one travels through the lumbering and wood working districts of Canada it would appear that unsaleable wood and sawdust could be used very efficiently in a plant of the above type as this refuse should not be discarded as being useless when so much available energy can be extracted therefrom by a proper application.

THE SITUATION IN QUEBEC PROVINCE.

(Specially Contributed.)

In a measure the pulp and paper situation in this province is in a somewhat critical state. The history of the industry shows that prices have gone in cycles or waves, and that high prices are followed by low figures. The tendency for the past few years has been towards higher levels, but the influx of new mills and the consequent increase in production has been faster than the demand warranted. The natural result will be a cutting of prices and a decrease in the earnings of the pulp and paper mills. While this may take place, it is not believed that the reduction will be permanent. Quebec seems destined to become the pulp and paper manufacturing centre of the continent. This province possesses abundant water powers, extensive pulp areas and the labor necessary to manufacture pulp wood into paper. The fact that paper can be manufactured in this province at $5.50 per ton cheaper than in the United States and the further fact that the export of pulp wood cut from Crown lands is prohibited, will tend to make this province a great pulp and paper centre.

During 1911, a total of nineteen pulp, paper and lumber companies were incorporated in the province, with a total capitalization of $41,709,000. During 1912 the incorporations of new companies was practically nil, but many of the companies incorporated in 1911 began to produce during the present year.

The Province of Quebec has twenty-eight out of fifty-four paper mills operating in Canada, and consumes 58 per cent. of the total pulp wood consumed in the Dominion. In 1910 this province exported 779,000 cords of pulp wood, valued at $5,090,000. In 1911 the amount exported was reduced to 636,000 cords, valued at $3,958,000. This reduction was due almost entirely to the prohibitory law put in force by Sir Lormer Gouin, stopping the export of pulp wood cut from Crown lands. In other words, this legislation caused a decrease of 18 per cent. in the export of raw pulp wood, while the local consumption increased by over 14 per cent. The figures for 1912 are not yet available, but it is expected that not more than 600,000 cords were exported during the year 1912. The daily output of pulp wood in the province now amounts to 2,850,000 lbs., while the daily output of paper is 1,400,000 lbs.

The Province of Quebec has a forest area of 111,000,000 acres, which is estimated to be worth $445,000,000. The lumber production from Quebec's 450 mills amounts to 1,000,000,000 feet per year, but it is as a pulp and paper centre that this province will become famous. The privately owned timber lands comprise about 6,000,000 acres, which are estimated to be able to supply from 500,000 to 1,000,000 cords of wood per annum for some years to come.

While in the main pulp and paper men are satisfied with the working of the Gouin Act prohibiting the export of pulp wood from Crown lands, there are movements from time to time in favor of a change in this Act. Recently a deputation of pulp, paper and lumber men waited on the Premier with the request that the Act be amended. It is also known that American paper men are becoming restless under the restrictions, and are seeking through the medium of their own Government, to bring pressure to bear upon the Quebec Legislature On the other hand, the Canadian Manufacturers' Association recently started a movement for the purpose of putting an export duty on pulp wood. They are advocating the appointment of a Royal Commission for the

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SOME OF CANADA'S NEWEST PAPER LEADERS

Geo. M. McKee, General Manager of the Donnacona Paper Company, Ltd., Quebec.

A man of most pleasing address, and great executive ability, comes to us after a prominent connection with some of the best plants of the United States, and the broadest business and paper manufacturing experience. After a year as sulphite superintendent with the Friend Paper Company, West Carrolton, Ohio, Mr. McKee spent the time between 1898 and 1907 as general manager of Hinkley Fibre Company, in the latter year be-



GEO. M. McKEE

coming president. A year ago Mr. McKee came to Canada to investigate paper making possibilities in Quebec Province, with the result that in August he purchased the Jacques Cartier River properties from the Forman interests and others, and organized the Donnacona Paper Company. He is now busy in constructing a news and ground wood mill on these properties. Contracts have been let to Ambursen Hydraulic Construction Company of Canada, Ltd., for the buildings of concrete and brick, and dam 1,100 feet long, twenty feet high for a head of sixty feet, on a cost plus basis. A brief outline of the plant is given elsewhere in this issue.

Wm. D. Gregor, General Superintendent, Kenogami Paper Mills.

Our readers will find a sketch of Mr. Gregor's life in the September issue of the Pulp and Paper Magazine. Already he has made himself a place in the trade, and has gathered to himself a large circle of warm friends. His work is characterized by a thorough knowledge of the general principles, and details of paper making, as well as by marked success in handling his men. We congratulate the Canadian trade on attracting such men, and wish Mr. Gregor all kinds of success amid new conditions.

E. R. Colbert, Manager Barber Paper and Coating Mills, Ltd.

Mr. Colbert came to Canada after fifteen years' American experience in coated papers of every grade on the purchase of the Canada Coating Mills by the above concern. Starting as helper on a machine at the Wabash Coating Mills in his home town, Wabash, Ind.,



E. R. COLBERT

he later became connected with the West Virginia Pulp and Paper Mills, and the American Coating Mill at Elkart, Ind

With experience in every department of the mill, as well as office and sales, his management of the above mills is proving most satisfactory.



WM. D. GREGOR

Joseph H. Slater.

We welcome Mr. Slater back to Canada as general superintendent of the Spanish River Pulp and Paper Mills, Ltd. Of English birth, he came to Canada very young, and got his first lessons in paper making in the Georgetown Paper Mills. At about eighteen, the United States lured him away, where he worked as machine tender, etc., in a number of different mills at Niagara



JOSEPH H. SLATER

Falls, in Pennsylvania, West Virginia, Holyoke, Mass., and Ohio, becoming familiar with practically every grade of paper made. When the Herkimer Paper Company of Herkimer, N.Y., making manilla, fibre, and news papers, became a unit of the International Paper Company, he was promoted from tender to boss machine tender, later becoming superintendent, which position he held for six years. Going from there he held the superintendency of the Glens Falls mill of the International Paper Company for several years and later went to the Ft. Edward Paper and Sulphite Mills in the same capacity. After a few years here he became the superintendent of the International Paper Company's Otis Falls mill, one of their largest plants. Spending only a year and a half with them, he was chosen for the position he now occupies, and has a very busy time adding the two new machines, purchased from the Kansas City Star, to the Espanola plant, and remodeling the Sturgeon Falls mill, formerly the Ontario Pulp & Paper Company, and before that the Imperial Paper Company. Mr. Slater is a man of great executive ability and has a thorough knowledge of paper in its minutest details.

Alex. Annandale.

Born at Polton, Scotland, of parentage in the paper business for two generations; educated at Edinburgh University, in the branches of chemistry and engineering necessary to pulp and paper, after which he passed through the various departments of his father's mill at Beltinford, later rising to manager and partner. Upon this mill being sold, Mr. Annandale joined the firm of John Annandale & Sons, Shotley Bridge, Durham, later becoming resident partner and sales manager in London. At the conclusion of this he went to South Africa in the interests of a syndicate, to investigate the opportunities there, but war and financial tightness at the time prevented the organization of the proposed company. After holding the managership of mills at Fourstones, making featherweight papers, and the Chunside



ALEX. ANNANDALE

Mills, Berwickshire, he did more expert work, which took him to Italy several times, to show them how to treat Esparto, then took a trip to Canada and decided to return at once to England and arrange his business to permanently settle here, which he finally accomplished this November.

He is an Imperialist, holding strong views in tariff reform in Great Britain, and is heartily welcomed to Canada, as an experienced paper maker.

Mr. Annandale has joined the Canada Paper Company at Windsor Mills, Que., and we bespeak for him success in his new sphere of activity.

The almost total destruction of the tamarack or larch, which took place throughout Eastern Canada almost thirty years ago, was caused by an insect, the larch sawfly. It appeared again about eight years ago, and in its spread westward it is repeating its former devastation on the younger tamaracks. The devastating spread of the sawfly in North America was due to the comparative absence of the natural means of control. Several important species of parasites new to science were discovered and have been studied and described. To increase the number of natural enemies of the sawfly, attempts are being made to introduce and establish in this country parasites which were discovered in England and which appeared to control the pest there.

CANADIAN REGULATIONS RELATING TO PULP WOOD AND OTHER TIMBER.

Following is an abstract of the chief laws and regulations governing the cutting of timber, licensing of timber lands, development of water powers, etc., in the Dominion and various provinces of Canada. Information is also included, where available, in regard to pulpwood statistics, &c.

NEW BRUNSWICK.

Mr. T. G. Loggie, Deputy Surveyor-General, in reply to our request to be furnished with the latest estimate of the pulp wood resources of the Province, says: "I am sorry not to be able to comply with your request as we have practically no figures as to how much pulp wood there is in this Province. We have no regulations whereby pulp wood can be cut nor any spruce or pine tree, but what would make a log sixteen feet long and nine inches at the small end. I enclose the timber regulations for 1912-13, also copy of the Act respecting the prohibition of exporting pulp wood which came into effect on the 1st of August, 1912. I might say, however, we absolutely give no licenses at all to cut pulp wood which means a tree smaller than the regulation size as stated above. Some three years ago we did adopt a regulation whereby thickets could be thinned out and stunted spruce cut in certain localities, but we found the regulation worked very badly for the Province and it was consequently withdrawn."

The Act respecting the manufacture of spruce and other pulp wood cut on Crown lands follows:

1. All sales of timber licenses by the Surveyor-General which shall hereafter be made and which shall convey the right to cut and remove spruce or other soft wood trees or timber, other than pine and poplar, suitable for manufacturing pulp or paper, and all licenses or permits to cut such timber on the limits and berths so sold, and all claims entered into or other authority conferred by the said Surveyor-General, by virtue of which such timber may be cut upon lands of the Crown, shall be so made, issued or granted, subject to the conditions set forth in the first regulation of Schedule "A" of this Act, and it shall be sufficient if such conditions be cited as "The Manufacturing Condition" in all such licenses, permits, agreement or other writing.

2. The regulations set out in schedule "A" of this Act are hereby approved and confirmed, and declared to be legal and valid to all intents and purposes, and the same shall apply to all licenses or permits hereafter issued, whether for the first time or in renewal of licenses or permits heretofore issued or granted.

3. The Lieutenant-Governor-in-Council may make any further or additional regulations necessary to enable the Surveyor-General to carry into effect the object and intent of the regulations contained in schedule "A."

4. No licensee of any timber license or permit shall hereafter sell, assign or in any way transfer to any other person or company the interest of such licensee therein under such license, until such licensee shall have paid to the Province the sum of four dollars per square mile.

5. The first three sections of this Act and the regulations thereby approved shall not come into force until the first day of October, A.D. 1911.

SCHEDULE "A".

1. Every timber license or permit conferring authority to cut spruce or other soft wood, trees or timber, not being pine or poplar, suitable for manufacturing pulp or paper on the ungranted lands of the Crown, shall contain and be subject to the condition that all such timber cut under the authority or permission of such license or permit, shall be manufactured in Canada, that is to say, into merchantable pulp and paper, or into sawn lumber, wooden ware utensils or other articles of commerce or merchandise, as distinguished from the said spruce or other timber in its raw or manufactured state; and such condition shall be kept and observed by the holder or holders of any such timber licenses or permit, who shall cut or cause to be cut spruce or other soft wood trees, or timber, not being pine or poplar, suitable for manufacturing pulp or paper under the authority thereof, and by any other person or persons who shall cut or cause to be cut any of such wood trees or timber under the authority thereof, and all such wood trees or timber cut into logs or lengths or otherwise, shall be manufactured in Canada as aforesaid. It is hereby declared that the cutting of spruce or other soft wood, trees or timber, not being pine or poplar, suitable for manufacturing pulp or paper, into cord wood or other lengths, is not manufacturing same within the meaning of this regulation.

2. Should any holder of a timber license or permit, or any servant or agent of such holder, or any person acting for him, or under his authority or permission, violate or refuse to keep and observe the condition named in the preceding regulation, then, and in such case, the license or permit to cut spruce, or soft wood trees or timber, not being pine or poplar, on the limit or berth, territory, lot or lots included in the license or permit, and on which, or on any part of which, there was a breach of such regulation, or a refusal to observe or keep the same, shall be suspended and held in abeyance and shall not be reissued, nor shall a new license or permit issue unless and until so directed by the Lieutenant-Governor-in-Council and then only upon such terms and conditions as the Lieutenant-Governor-in-Council may impose.

3. The Surveyor-General, his officers, servants and agents, may do all things necessary to prevent a breach of the aforesaid condition and to secure compliance therewith, and may, for such purpose take, seize, hold and detain all logs, timber or wood so cut as aforesaid, and which it is made to appear to the Surveyor-General it is not the intention of the licensee, owner, or holder, or person in possession of, to manufacture or cause to be manufactured as aforesaid in Canada or to dispose of to others who will have the same so manufactured in Canada, until security shall be given to His Majesty, satisfactory to the Surveyor-General, that the said condition will be kept and observed, and that such logs, timber or wood will be manufactured in Canada as aforesaid, and in the event of the refusal on the part of the licensee, owner or holder, or person in possession of such logs, timber or wood, to give such security, within four weeks after notice of such seizure and demand of security by, or on behalf of the Surveyor-General, then the Surveyor-General may sell or cause to be sold such logs, timber or wood by public auction after due advertisement, to some person or persons who will give such security to His Majesty as the Surveyor-General may require, that such logs, timber or wood shall be manufactured in Canada. The proceeds of such logs, timber or wood, shall after such sale and after deducting all expenses of such seizure and sale, and any sum due and owing to His Majesty for or in respect of any timber dues trespass dues, ground rent or on account of the purchase of any timber, or timber berths, by the owner, licensee or holder of a permit or other person who

has cut or caused to be cut such logs timber or wood or who is the owner or holder of the same, to be paid over to the person entitled to the same.

4. Provided, nevertheless, that nothing in the preceding regulations which requires spruce or other timber, not being pine or poplar suitable, for manufacturing pulp or paper to be manufactured in Canada as aforesaid, shall apply to logs, timber or wood cut and in use in Canada for fuel, building or other purposes for which logs, timber or wood in the unmanufactured state are or may be used.

5. After seizure the burden of proving that the timber is to be manufactured in Canada shall be on the owners of such timber.

6. Where the timber to be seized is mixed up with other timber the whole, of the timber may be attached and dealt with accordingly until satisfactorily separated.

GENERAL REGULATIONS.

At a general sale, to be held at the Crown Land Office, at such time in the year, A.D. 1912, as the Surveyor-General may determine, all timber licenses which have heretofore expired, or which may hereafter expire, or be declared cancelled under these regulations shall be offered for sale.

The upset mileage in all cases to the twenty dollars per square mile, subject to the stumpage, regulations and restrictions hereinafter provided.

The stumpage payable on all logs, timber or other lumber, cut or made upon Crown Lands under license shall be as follows:

For spruce, pine, or hackmatack saw logs, per M superficial ft. $1.25

And for all other descriptions of lumber, such as knees, foot hooks, cordwood, etc., fifteen per cent. of the market value thereof at the mill.

All lumber cut under this license shall be scaled or taken account of in the customary method of scaling of lumber for stumpage (except hemlock, which shall be scaled at full contents) by some person or persons to be appointed by the Surveyor-General, to be hereinafter termed scalers who shall return to the Surveyor-General the quantity cut under this license. The scaler and his assistants are to be boarded and lodged at the expense of the said licensee and should such licensee refuse to board and lodge such scaler or assistants, he or they to report the same to the Surveyor-General, who may thereupon take such means as he sees fit to provide the said scaler and his assistants with board and lodgings and the expense thereof shall be paid by the licensee and shall, until paid, remain a charge and lien upon all lumber so cut under this license.

All applications for timber licenses on vacant Crown lands, shall be made by petition, which shall describe the situation thereof, and specify the number of square miles required by the applicant. No petition to be for more than ten nor less than two square miles. Only one application to be received by the Surveyor-General for the same ground.

All logs, timber, trees or other lumber, as aforesaid, cut upon unlicensed Crown lands, or which may be cut by any person beyond the limits of his own berth, shall be seized and forfeited to the use of the Crown; and no timber shall be cut on any berth until it be purchased at public auction.

As a protection to the Government against lands being held under license for speculative purposes, and not operated on, all Licensees shall make such operations annually on the lands held by them under license as may be deemed reasonable by the Surveyor-General, and the Surveyor-General shall have the power to call upon any licensee to cut an amount equal to at least (10) Ten M. superficial feet of lumber for each square mile of licensed land held by him, and may require that such operation or cut shall be made on such blocks or timber lands held by the licensee as the Surveyor-General may determine or direct. Should the licensee prefer to pay the stumpage that would be due on such quantity of lumber at 10 M. superficial feet per mile, instead of making the required cut, he shall have the right to do so in any year, on notifying the Surveyor-General and obtaining his consent thereto; and such charge in lieu of stumpage shall be payable on or before the first day of August, when such licenses expire. On failure of the licensee to comply with any of the foregoing conditions, the licenses shall be forfeited and the berths held open for application by any other person.

Licensees who have paid their stumpage dues in full, and have otherwise fully complied with all the conditions of their licenses, on or before the first day of August in each year, shall be entitled to annual renewals of licenses for such parts of the ground held by them as may at the first day of July in each year be vacant and unapplied for, on payment of the mileage thereon, at the rate of eight dollars ($8.00) per square mile, payable 1st August in each year. These renewals of licenses may be received for a term of twenty-four years from August 1st, 1894; provided, nevertheless, that no renewal mileage on licenses shall be received unless all stumpage dues have been fully paid; also provided, that no license shall be reckoned at less than two square miles, and that each license must be renewed for its full extent or entirely dropped. By this clause failure to renew the license acts as a forfeiture.

NOVA SCOTIA.

All applications for licenses to cut timber on Crown lands, shall be made by petition, addressed to the Commissioner of Crown Lands, setting out the definite location of the lands applied for, and such further particulars as set out in the form provided. No petition for license to cut timber shall be for a less area than twenty acres, except where an isolated block of Crown lands contains a less area than twenty acres, or in case of an application to cut timber for cordwood, firewood, shingle logs, fencing or hackmatack posts or railway ties, etc. The fee to accompany each petition is 25 cents per acre, but no fee shall be less than ten dollars.

In cases of license to cut timber for saw logs of pine, spruce, hemlock or hardwood, there shall be in addition to the license fee, stumage dues per thousand superficial feet to be fixed by the Commissioner.

In case of a petition for license to cut timber for pulp wood, there shall be stumpage dues per cord of 128 cubic feet piled for measurement or as per cubic rule, additional to the license fee before mentioned, which shall be fixed at twenty per cent. of the market value at the mill or point of shipment; subject, however, to the power of the Commissioner to fix a greater or less price according to conditions. It is further directed that no license shall be given to cut pulp wood on lands where the trees are such as will grow to be suitable for timber and lumber.

Stumpage dues not otherwise provided for shall be as follows:

Hardwood timber, 12 inches and upwards, round, sided or squared, ten per cent. of market value. Spruce piling, 10 inches and upwards, twenty per cent. of market value.

All trees must be cut low and in a proper manner, and no part of the top that is fit for timber shall be left in the woods. If the stumps are cut too high, the same may be measured under the direction of the Commissioner and charged to the licensee at regular rate. All spruce or pine trees used for skidding or building roads, or for like purposes, shall be chargeable to licensee at regular rate.

No spruce or hemlock trees for saw logs which are less than twelve inches in diameter, no pine trees for saw logs which are less than fifteen inches in diameter, and no spruce trees for piling which are less than ten inches in diameter, shall be cut under any license to cut timber; such measurements to be made upon the butt of the log as cut from the stump.

QUEBEC.

In this Province the Minister of Lands and Forests has control of the Crown Lands, the national parks and forest reserves within the province, the property of the Jesuits' estates, and questions of water powers.

For the administration of forest lands, the province is divided into "agencies," and the agents have charge of the granting of timber licenses, inspection of lands, the collection of fees, and the location of lands offered for sale. The agents are under the authority of inspectors. The Lieut.-Governor-in-Council may classify lands as "suitable for cultivation," and "lands for forest industries," and after such classification no lands may then be set apart for colonization purposes out of such reserves. When land is sold for settlement, no more than 100 acres may be sold to any one person, and no one person may obtain deed from the Crown of more than 300 acres.

Yearly licenses to cut timber are granted, subject to regulations established from time to time. The licensee shall make returns of timber cut, and timber so cut may be seized for arrears of Crown dues. Owners of saw mills may be required to prove where they obtained logs, and if the logs are shown to have been unlawfully taken from public lands, they may be seized and condemned.

Sale of timber limits must be by auction, after being advertised in the Quebec Gazette for at least 30 days, except in the case of limits of small extent, when 15 days' notice shall be given. The Minister shall have the right to examine the books kept by any licensee recording the quantity of wood or lumber cut.

Section 1619 provides: "All timber cut without license, not more than ten miles from the boundary line dividing this Province from the United States, or from the neighboring Province, as soon as it shall have been established that the said timber has been cut unlawfully, and that a due seizure thereof has been made, may be at once sold by the person duly authorized for that purpose, without his being obliged to give the notice and delay required, under similar circumstances, for any other part of the province."

The erection of dams is subject to the right of lumber companies to float timber and rafts down stream, and it is forbidden to throw bark, slabs, etc., into rivers.

All licenses are subject to a yearly ground rent of $5 per square mile, dating from 1st September, 1910, and are granted from 1st May to 30th April each year after issue, and may be renewed to licensees who comply with the regulations. Licenses may be annulled where the value of a limit has been damaged or destroyed by fire. Licenses may be transferred at the will of the Minister, on payment of a bonus of $4 per square mile. Transfers may be granted without a bonus on conditions laid down by the Minister.

Stumpage dues are levied on all stumps over two feet above the ground, on all timber over six inches in diameter left in the tops, on all lodged trees, on all trees used for skids, for building camps, bridges, corduroy roads, dams and other works and on all logs left in the woods.

License holders are not allowed to cut on Crown lands white and red pine of less than 13 inches, and other trees of a diameter of less than 12 inches measured at the stump at two feet above the ground; but it is lawful to cut swamp spruce and paper birch down to 7 inches in diameter measured as aforesaid, as well as balsam of any diameter.

Section 13 provides that all timber cut on Crown lands after 1st May, 1910, must be manufactured in Canada, that is to say, converted into pulp or paper, deals or boards, or into any other article of trade or merchandise of which such timber is only the raw material.

The following shall not be considered as manufactured, within the meaning of the present regulation; timber simply cut into lengths, piled, barked or otherwise worked preliminary to the manufacture of pulp or paper, deals or boards or any other article of commerce; nor waney nor board timber, nor timber in the form of poles; but timber completely squared and railway ties are considered as manufactured.

The stumpage tariff is as follows:

All wood goods cut in virtue of a license after the 1st September, 1910, shall be subject to the following charges:

1. Square, waney or flat timber per cubic foot:

(a) White pine, oak, hickory, walnut	6c.
(b) Red pine, elm, ash, cedar, basswood, birch, maple, tamarac	4c.
(c) Spruce, balsam, grey pine, or banksian pine, hemlock, white birch, aspen, poplar	3c.

2. Saw logs and boom and dimension timber in the raw state, per thousand feet board measure:

(a) White pine, oak, walnut, hickory	$2.00
(b) Red pine, elm, ash, cedar, basswood, birch, maple, tamarac	1.40
(c) Spruce, balsam, gray pine or banksian pine, hemlock, white birch, aspen, poplar	1.05

The rate of ground rent shall not be increased until the first September, 1920.

All license-holders who comply with the law and regulations until that date, have the privilege of renewing their licenses at the same rate of ground rent, and the dues hereby imposed on all timber cut under license shall not be increased until the first of September, 1920.

Nevertheless, the rate of ground rent may at any time be increased for license-holders who do not operate on their limits, the Crown reserving the right to fix the quantity of timber to be cut to constitute sufficient lumbering operations.

This shall not affect the right of the Crown to regulate territories under license for other purposes.

ONTARIO.

Timber licenses are under the authority of the Commissioner of Crown Lands, and sales of timber limits are by public auction to the highest bidder. In case of sale of pulp wood areas, the successful tenderer is required to erect mills, employ a certain number of hands, and expend certain capital within a specified time. All timber licenses expire on the 30th April next after date thereof; but as to lots sold or located during the currency of any license, the same shall immediately after sale or location be withdrawn from the operation of such license so far as timber other than pine is concerned. Lots so withdrawn from license shall remain withdrawn, even though such sale or location shall have been cancelled.

The present annual ground rent on timber berths or limits, is $5 per square mile, which shall not be increased for a period of ten years, dating from April 30th, 1910, and the fee for the transfer of limits is $5 per square mile, or fraction of a mile. The Crown dues on spruce pulp wood are 40c. per cord, which also shall not be increased during the same period.

By order-in-council, January, 1900, new regulations were passed governing the cutting of timber for pulp wood.

Every license or permit conferring authority to cut spruce or other soft wood, trees or timber, not being pine, suitable for manufacturing pulp or paper, on the ungranted lands of the Crown, or to cut such timber reserved to the Crown on lands leased or otherwise disposed of by the Crown, which shall be issued on or after the 30th day of April, 1909, shall be subject to the condition that all such timber cut under the authority or permission of such license or permit shall, except as hereinafter provided, be manufactured in Canada, that is to say, into merchantable pulp or paper, or into sawn lumber, woodenware, utensils, or other articles of commerce or merchandise as distinguished from the said spruce or other timber in its raw or unmanufactured state; and it is declared that the cutting of such wood into cordwood or other lengths is not manufacturing the same within the meaning of this regulation.

WATER POWERS IN ONTARIO.

In 1907 regulations were approved governing the lease of water powers of over 150 horse power on Crown lands.

In leasing lands containing water powers, the Crown does not alienate the water privilege, but reserves it with sufficient land required for its development, such as dams, flumes, races, flooded lands, etc., compensation being made to the owner of flooded land by the lessee of the water privilege, which forms a separate property. A right of way to the water power is reserved in all grants of adjoining lands. In applying for a water power, a plan and full notes by an Ontario land surveyor shall be filed with the Department of Lands, Forests and Mines, with a report by a competent engineer, showing location and description of land, height of fall, volume of water at average high and low stages, height of dams, plans for developing power, cost of development, form of power to be transmitted, lands overflowed or affected by the proposed works, and nature of proposed industries for which power is to be used. The Minister may dispense with such requirements if he is already in possession of necessary information. The applicant may be required to furnish all such information at his own expense, and may be required to furnish such details to the Hydro Electric Power Commission of Ontario; and shall submit proof of his financial standing. A deposit may be required before a lease is granted. All rentals fixed shall be payable yearly in advance, and no lease is granted for a longer period than 20 years, but the lessee may have the right of renewal on terms to be fixed by the Minister.

The right of timber owners to drive logs down stream shall not be interfered with, and in new dams provision is to be made for such right, and lessee shall not obstruct navigation in any river previously navigable.

The lessee shall agree to develop special quantities of power within specified periods, and shall agree to allow the use of surplus power to others on terms to be agreed on, and the Hydro Electric Commission may determine such matters in case the parties fail to agree. The Hydro Electric Commission may exercise supervision over such works while in construction and operation, and may itself acquire such works "by purchase, lease or otherwise."

At expiry of lease the water privilege reverts to the Crown, the lessee being allowed a reasonable time to remove machinery, and such leases are subject to the general regulations that may be made by the lieutenant-Governor-in-Council. Leases may be cancelled for non-payment of rents, after a period of 90 days.

MANITOBA

In the Province of Manitoba, as existing up to 1911, Crown lands were under the Dominion Government, but there were no areas of forest on a scale available for the pulp industry. By the Act of 1912, the boundaries of Manitoba have been extended to the shores of Hudson Bay, and considerable new forest lands have been added to the Province. It is understood that the Dominion Crown lands will be transferred to the Province in due course, and it is likely that the forestry and water power policy of the Province will be on lines parallel to those of Ontario.

ALBERTA AND SASKATCHEWAN.

By the Dominion Act creating the Provinces of Alberta and Saskatchewan, the Crown lands have remained till now under the jurisdiction of the Dominion Government.

Licenses shall be disposed of by public auction at the office of the Dominion timber agent for the district. Before sale the timber land shall be surveyed into berths not exceeding 25 square miles, by a qualified Government cruiser, who shall estimate the timber and fix an upset price, cost of survey to be paid by purchaser. The berths shall not be sold at less than the upset price. Sixty days' notice of sale shall be given in a local newspaper, and in a paper of general circulation; and a record shall be kept of the names of applicants. Purchases to the amount of $1,000 or under shall be in cash at time of sale; purchases amounting to from $1,000 to $5,000, one-half cash and three months note at 5 per cent. interest; purchasers of over $5,000 and up to $10,000, one-third cash and balances in three and six months, with 5 per cent. interest; purchases exceeding $10,000, one-fourth cash and balances in three, six and nine months. Default in payment forfeits license, and no license is issued till purchase price and first year's ground rent is paid. All licenses expire on 30th April each year. Licenses are renewable from year to year, if conditions have been fulfilled, and subject also to terms and conditions fixed by the regulations at time of renewal. The Minister of the Interior, under whose authority the licenses are issued, may withdraw portions of the berth for settlement. Thirty days' notice of withdrawal is given to licensee, and ground rent is reduced in proportion. Right to timber berth cannot be assigned without consent of the Minister, the fee for transfer being $1 per square mile.

In his contract with Government, the licensee agrees to cut no timber less than 10 inches at the stump, unless for making a road to get out merchantable timber; he shall take precautions against fires; shall keep a record, open to inspection, of timber taken out each year. Licensee pays half cost of guarding timber from fire. If a railway becomes entitled to land under license, whether as part of railway subsidy or for right of way, it shall be withdrawn upon due notice, the ground rent being reduced accordingly.

Ground rent is $5 per square mile, except in district west of Yale, B.C., which is 5 cents per acre. Dues on timber cut are as follows: Sawn lumber, 50 cents per thousand feet, board measure; railway ties, eight feet long, 1½ cents each, railway ties, nine feet long, 1¾ cents each; shingle bolts, 25 cents per cord; and 5 per cent. on the sale of all other products of the berth.

WATER POWERS.

Land in these Provinces required for the development of water power, can be sold or leased only under regulations made by Governor-in-Council. All maps and plans showing lands to be acquired for such purposes, to be certified by qualified Dominion land surveyor, submitted in duplicate and registered. The applicant shall give address, occupation and financial standing, and shall explain character of works, such as description of source of water supply, height of fall at high, medium and low stages, the maximum and minimum amounts of water power. If applicant is a company, names of company's directors, paid-up capital and proposed method of raising funds; if a municipality, its location, boundaries, population, etc., value of property subject to taxation. The applicant shall enter into specific agreement, setting forth the amount of power to be developed, the time of construction of works, the area within which the works shall be operated, etc. The term of license shall be for 21 years, at an annual fee to be fixed, and renewable for three like terms, on conditions provided by the regulations. The work shall be subject to supervision of an engineer appointed by the Minister. At the expiry of each term the Government may cancel the lease, giving one year's notice, and fees may be readjusted on renewing lease. On termination of third term of lease, compensation shall be paid for the works, the amount to be fixed by arbitration. In the event of expropriation by the Crown, a bonus will be allowed as follows: If the works have been in operation five years, a bonus of 30 per cent. of their value; if from five to ten years, 25 per cent.; if from ten to fifteen years, 20 per cent.; if from fifteen to twenty years, 15 per cent., and if twenty years or more, 10 per cent. Rates for power shall be approved by Government.

BRITISH COLUMBIA.

Changes are being made in the regulations affecting timber cutting in the province, but those recently in force were as follows:

Leases of timber lands that have been granted for a period of 21 years, may be renewed for like periods, on the terms in force at the time of expiration of a term, provided conditions have been fulfilled.

All timber cut from Crown lands under license, must be manufactured within the province. Any person cutting timber on Crown lands without authority, is liable to fine of from $5 to $500.

Special licenses for cutting timber may be taken out, complying with forms of application, the applicant describing the lands according to form, and publishing at his own expense a notice in the B. C. Gazette, and one local newspaper. Within two months the applicant shall pay the fees on the land, which shall be: For each license for land west of the Cascade range, $140 for an area not larger than 640 acres, and east of the Cascade and in the district of Atlin, $115. The license shall be subject to such taxes and royalties as may be imposed from time to time. Licenses may be renewed by notice on or before 15th April, and may be extended for a period of 16 years at the same amount as now paid, with the addition of a royalty of 10 cents per thousand feet, board measure, on timber suited for spars, railroad ties and mining props. Special timber licenses are transferable and renewable for 21 successive years, on payment of a fee of $20, these special licenses being subject to changes in the Government regulations, and subject to an extra impost of $25 to $50, where the applicant has failed to fulfil the conditions. No timber license shall be granted on Indian reserves. There is reserved to the use of the Crown a royalty of 25 cents for every cord of wood, and 50 cents for every thousand feet, board measure, on timber for spars, piles, saw logs, railroad ties, mining props and shingle bolts. The Lieutenant-Governor-in-Council may allow a rebate on piles, telegraph poles, and crib timber not manufactured in the province, if deemed advisable.

The taxes on timber cut from Crown lands are according to the following schedule: Mining props and logging and railway ties, 50c. per cord; cordwood, 25c. per cord, with a rebate of all the tax above 1 cent per cord where the wood is used in the province. On shingle or other bolts, the tax is $1 per cord, with a similar rebate if used within the province. Timber cut without a license is liable to seizure, but miners and settlers have certain specified privileges.

By order-in-council of April, 1911, the price of Crown lands which are open to sale, was fixed at $10 per acre for "first-class," and $5 per acre for "second-class."

WATER POWERS.

An Act to declare the rights of the Crown regarding waters and water powers, was passed in 1909, and by this Act a Board of Water Commissioners was provided for the province, being divided into water districts, and the District Boards having power to adjudicate upon claims, and direct the character of works to be established.

Persons or companies desiring water privileges shall post notice of their intention to apply for license, notice to be on a form supplied by the Commissioners, such notice to specify the quantity of water to be used, the area of land to be occupied, the purpose of the works, etc. No license shall issue to one person or company for more than one purpose, but licensees may construct works jointly. Plans of the proposed works shall be presented, giving details, and the licensee shall give security for compensation to owners of property affected injuriously by the works. If the amount of compensation for such injury cannot be arranged, it shall be settled by arbitration.

One clause provides: "If as a result of the construction of any works by a licensee under this part any (new) water power is created, the licensee shall not, by reason of such construction only have any right, title or claim to use the power so created."

PULP AND PAPER NEWS

The Montreal Paper Co. are now moving into a new office of concrete construction at their mill at Port Neuf.

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Mr. Burrows, engineer of Boston, Mass., has completed investigations in connection with the power at the Pont Rouge mill of F. W. Bird & Son.

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The Riordon Paper Mills Co. are planning to build a new paper mill at Merritton, adjoining their present plant, at a cost of between one and two million dollars.

* * * *

M. J. O'Brien, of Cobalt and Toronto, is completing plans for a large plant for the manufacture of pulp, paper and by-products near Haileybury, Ont., to employ 750 hands.

* * * *

Messrs. J. Ford & Co., Port Neuf, have just completed a new machine room for No. 3 mill of concrete and steel. This mill runs entirely in building papers.

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Mr. Robt. Marx, of J. Marx & Co., London, is at present spending a few weeks in the interests of his firm, with the Canadian representative, Mr. J. A. DeCew, of Montreal.

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The Munn Lumber Co., formerly owning large tracts of timber land in the Algonquin National Park district, but which sold its rights to the Ontario Government, has given up its charter.

* * * *

The Toronto Paper Manufacturing Co. has declared a dividend at the rate of 5 per cent. per annum for the quarter ending December 21st, payable on the 15th prox., to shareholders of record on the 31st December.

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Engineers for Mr. Geo. F. Hardy, in charge of Messrs. Remsen & James, are engaged at the Laurentide Company mill at Grand Mere, Que., in making a complete surveys and flow readings for the new power being developed for the company.

* * * *

Mr. William Whyte, the superintendent and local manager of East Canada Pulp & Paper Co., has left Murray Bay to become superintendent of the new 100-ton ground wood mill of the Abitibi Pulp & Paper Co., at Iroquois Falls. These are the Hansen and Ogilvie interests.

* * * *

Mr. Chas. M. Bullard of Arthur D. Little Laboratory, Boston, has been investigating the sulphite plant of the Toronto Paper Mfg. Co., Cornwall, with a view to making elaborate alterations. They also have under consideration the modernizing of their power development.

* * * *

We hear from Quebec Province that the Government is considering following the example set by the Ontario Government in regard to the Abitibi limits, and may call for tenders for cutting pulp wood in the hinterland of north Quebec, with the proviso that the successful contractors shall establish mills.

* * * *

E. A. Bullis, a well-known millwright, of Ottawa, who built the first E. B. Eddy mill at Hull, and the first J. R. Booth saw mill in Ottawa, died recently at the advanced age of 86. He was born in Vermont. He retired from active business about ten years ago, and recently celebrated the 61st anniversary of his marriage.

* * * *

Mr. S. J. B. Rolland has been appointed president of the Rolland Paper Co. in place of his brother, the late Hon. J. D.

Rolland, so widely known in paper circles. He has been in intimate connection with the mills at St. Jerome and was an important factor in the buying and reorganizing of the St. Adele Mill.

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The claim of the Dominion Government against the estate of the late Jas. Davy, pulp manufacturer, Thorold, Ont., for $28,131, on the ground that more water had been used by him than the amount covered by a lease dated February 11th, 1880, and originally granted to John Battle, of Niagara Falls, Ont., who had afterwards asigned the lease to Mr. Davy, has been disallowed.

* * * *

The St. Maurice Lumber Co., of which Mr. H. Hilliard, of Dalhousie, N.B., is the representative, has purchased the property of the Gaspe Lumber & Trading Co., carrying on business at Gaspe Basin, including mills and a fine site on the harbor. It is stated that the company will embark extensively in the pulp and paper industry, one of the first steps being to erect a large sulphite mill.

* * * *

The Algoma Eastern Railway, connecting Sudbury with the Great Lakes at Little Current, has now been completed and the Ontario Government will be asked to fulfil the terms of its subsidy grant. This line, which was part of the proposition for the Manitoulin and North Shore Railway, was originally projected by the Clergue interests, but was abandoned when the Sault Ste. Marie allied interests became entangled in difficulties.

* * * *

We hear that a factory is to be erected in Medicine Hat at a cost of $75,000, to make cardboard and coarser grades of paper out of straw. Details are not yet to hand. The quantity of straw which annually goes to waste in the Canadian West is an alarming economic feature, and any attempt to utilize it is to be viewed with sympathy. This will be the first commercial attempt on a large scale to convert it into paper materials in Canada, though in the United States and other countries there are a number of factories established. F. A. Barton and C. F. Schans, of Calgary, are interested.

* * * *

Mr. M. Hirsell, of Hinkley, N.Y., has completed an installation of his own design for the acid system of the Riordon Paper Co.'s new extensions at Hawkesbury. It is on the principle of the tower system in units of three, in series, connected in parallel. A very high absorption is obtained by altering the distribution in the second and third towers, passing a much higher per cent. of the water through the second than the third. These towers are of concrete about 50 ft. high. Mr. Hirsell has a 50-ton system working very satisfactorily at the Hinkley Fibre Co. He has, we understand, recently applied for patents on the idea of the distribution.

* * * *

The following have recently received appointments at Price Bros.' Kenogami Mill: Wm. Jarratt, boss machine tender, formerly of Laurentide Co., Ltd.; Robt. Cranston, boss paper maker, of J. R. Booth's, and later E. B. Eddy Co.; M. L. Gregg, night superintendent of Spanish River Paper Mills; R. Hill, sulphite and ground wood superintendent, of International Paper Co., Rumford, Me.; Robt. Farnam, superintendent of ground wood, and Frank Coty, night superintendent, both of International Paper Co., Rumford; J. E. Bergeron, mechanical superintendent, formerly superintendent of ground wood and sulphite, Jonquiere Pulp Co.

* * * *

Mr. Harry Bennett, resident engineer for Geo. F. Hardy at Kenogami Paper Mills, was married in Glens Falls, N.Y., on December 10, to Miss G. Clarke, a relative of Mr. G. Cohoon, the general manager of Laurentide Co., who, with Mrs. Cohoon, were guests. Mr. Crooker, manager of the Laurentide's Toronto office, acted as best man, and Mr. Sabatin, a director, was one of the ushers. Numerous pulp and paper people of Canada and Glens Falls were among the guests, the groom having been very popular at Laurentide where he held the position of engineer before joining the staff of Mr. Hardy. The Pulp and Paper Magazine extends best wishes to Mr. and Mrs. Bennett, who will reside at Kenogami, Que.

* * * *

The Anglo-Newfoundland Development Co. recently issued its annual statement for the year ending August 31st last. After making provision for depreciation of all plant and machinery and logging gear, and for depreciation of houses, furnishings and other equipment, etc., the profits amounted to £51,233. The directors have written £16,398 off the cost of issuing the debenture stock, and this item now disappears from the balance sheet. After payment of debenture interest due, and setting aside the amount accrued to August 31st, there remains to be carried to the balance sheet £9,834, to which has to be added the credit balance brought in from last year, making a total balance of £14,931 carried forward to the credit of profit and loss account. It was pointed out that the additions to the plant have only so recently been completed that the benefits resulting therefrom have scarcely been able yet to show evidence.

TECHNICAL WORK AT LA TUQUE.

Mr. Moore, chief chemist for the Brown interests, is spending his entire time at their La Tuque Mill, for a few months, bringing that mill up to his very high standard of scientific control. In this connection he is carrying on numerous and elaborate experiments to adapt his mill to Canadian conditions. The record of their Berlin mills, and the Burgess sulphite have been a wonder in pulp manufacture. Mr. Moore has become a veritable wizard, and keeps himself and his twenty-five chemists hard at work continually in their numerous pulp and paper laboratories, which are without doubt the most elaborate in the world. He has made not thousands, but hundreds of thousands of dollars for his principals, which goes to show what can be done by a realization of the value of technical experts. In this connection we take occasion to deprecate the tendency among some other mills to try and find out by means, fair or foul, the secrets so discovered by others. These secrets are only scientific facts, which are the reward of any untiring searcher. Only by spending energy and money can they be discovered, bringing to the owners at the same time all the benefits derived from such investigations. We feel it would be better for the industry as a whole if these results were less closely guarded, but one can hardly expect anything else when so few mills spend money in these departments.

WALL PAPER TRADE.

Last year Canada sent wall paper to the value of $19,555 to New Zealand, as compared with a value of $2,340 in 1910 and $905 in 1909, and this year the total will be much higher than last, according to a report of Mr. W. A. Beddoe, the Canadian Trade Commissioner at Auckland, to the Trade and Commerce Department. Mr. Beddoe says:—

"During the season of 1910 a direct representative of a Canadian wall paper firm visited New Zealand and personally called upon the importers. The designs and materials were favorably received, and a good business resulted. The same representative repeated his visit last year with even more satisfactory results. The results illustrate the advantage of sending direct representatives to New Zealand. Canada in each year securing a larger proportion of the wall paper trade."

The Situation in Quebec Province.

Continued from Page 33

investigation of this whole question, and, if possible, to recommend that the Dominion Government put an export duty on pulp wood. They point out that last year the total cut of pulp wood in the Dominion was 1,520,227 cords valued at $9,678,616, or an average price of $6.37. Of this, 44.2 per cent. was manufactured in Canada, while 55.8 per cent. was exported in its raw state, practically all to the United States. This raw pulp wood exported to the United States was valued at $5,340,592. Of the total amount, over 75 per cent. went from the Province of Quebec. Their idea in putting an export duty on is to compel the manufacture of all pulp wood at home. This, they believe, would force American paper mills either to locate in Canada or else to buy their paper from Canadian mills.

While there is a certain amount of uncertainty regarding future legislation in connection with pulp and paper, and while there is a certain amount of uneasiness regarding stability of present prices, the general feeling among pulp and paper men is one of optimism. They believe that the coming year will be a favorable one despite the many new mills which have come into the market. The general prosperity of the Dominion, the influx of hundreds of thousands of new immigrants, the opening up of new towns, the starting of new papers and the increase in the size of established ones, will all tend towards the prosperity of the industry with which they are connected. In common with all other business men they believe that "the 20th Century is Canada's," and while there may be temporary set-backs there is nothing sufficiently serious in the present outlook to cause real apprehension among pulp and paper men.—R.

THE BRITISH WOOD PULP ASSOCIATION.

(Report Specially Prepared for the Pulp and Paper Magazine.)

London, December 20th, 1912.

It is on record that Sir T. Vansittart Bowater, of the English paper trade, once remarked that he tried to ascertain what were the benefits to be derived by becoming a member of the British Wood Pulp Association, but having failed in the effort he was, consequently, not in a position to give any secrets away. The remark just about sums up the experience of those who attended the annual gatherings of the Association, held early in December in London. But though no secrets were divulged during the proceedings about the passing of business in the wood pulp trade, yet a few questions of extreme importance to Canadians were dealt with and these, combined with an excellent menu and list of vins—the success of which rested with Mr. F. E. R. Becker, of Messrs. Becker & Co., Ltd., agents for the Chicoutimi Pulp Company and the Macleod Pulp Company—provided good material for a pleasant sojourn in the English capital.

The usefulness of the British Wood Pulp Association is demonstrated by the recent formation of a "Protection Association," which the members have promoted for dealing, on behalf of those who belong to it, with disputed matters arising out of the carriage of wood pulp by sea or land and matters kindred thereto. Recent litigation in the English High Courts has proved the necessity of such a protective organization, and there is no reason why wood pulp men should not possess such a fighting machine like the shipowners, who through their clubs can in cases of dispute spread their liabilities over a large number of their members, thereby saving not only the personal trouble of attending to a dispute, but, also, very often considerable expense. This protective body of the British Wood Pulp Association will deal with claims and other matters at home and abroad, and, undoubtedly, it will prove a useful and powerful instrument of defence in the future.

Another interesting subject which the Association considered, was the sampling and testing of pulp for moisture. An investigation was made some time ago into the mode of sampling and a report was furnished in which disapproval was expressed of the way certain tests were carried out under the Association's contract form. The matter has not been fully settled yet, as the help of the Scandinavian Wood Pulp Association has been called in and when the advice of that body is received, the result will be watched with keen interest. The British Wood Pulp Association has a set of rules set down for analysts for sampling wood pulp for moisture, and they must be strictly adhered to.

Mr. Frank Lloyd, head of Edward Lloyd, Ltd., was re-elected president for the ensuing year. He is one of the most highly respected men in the British wood pulp and paper trade, and at the banquet at night in the Connaught Rooms, which was attended by over 200 people, he displayed brilliant talent in interspersing humor with sentiment. His advice on the conservation of forests will appeal to all Canadians. He said: "Last year I made a few observations on the storage of water and the better regulations of the flow of rivers, but this year I would like to give sound advice on the conservation of forests. It is incumbent on every pulp maker in every pulp producing country to foster the forests of it and devote his earnest attention to the question of the preservation of areas where pulp is made. I, therefore, strongly urge and appeal to all pulp makers to do all they can to stimulate interest in this way for the good of the industry and to induce their governments to encourage forestry and replete all denuded areas, in addition to teaching the better handling of existing forests. If every pulp maker did that, he would develop the wood pulp industry and assist those dependent upon it."

The honor of submitting the toast of the president's health was bestowed on Mr. F. E. R. Becker, who received a great ovation, being a member of a firm who rank amongst the largest of British importers of wood pulp from Canada and Scandinavia. He remarked that the British Association was not merely an association of those who sold pulp and of those who were servants of those who made pulp. It was an association of the largest buyers in the world. They had men like Frank Lloyd, who produced and consumed wood pulp. Members of that association had found the paper makers their best friends and the Canadian Association had found in it a support and thorough co-operation on the part of the buyers, which was seldom met with in any other trade. The British Wood Pulp Association had helped to make business easy for those who found it difficult to do business and had done something to smooth the path.

Mr. Becker is one of the vice-presidents of the Association and it was through his instrumentality that the trade and paper makers in England subscribed so liberally towards the relief of those people who suffered loss at the last big fire in Chicoutimi when the pulp mill had a narrow escape from devastation. Other vice-presidents are A. E. Reed, L. P. Andrews, T. Owen, W. G. Taylor and Harry B. Wood.

OTTAWA PULP AND PAPER HAPPENINGS.

(Special to Pulp and Paper Magazine.)

Ottawa, December 30.

Seated in his office at the Chaudiere, Mr. George H. Millen, joint manager and the "grand old man" of the E. B. Eddy Company, last week received the congratulations of his hundreds of friends on the occasion of the 50th anniversary of his marriage. He was made the object of several presentations, one being that of a magnificent gold loving cup by managers and agents from all over the country, a delegation of half a dozen representing about twenty-five all over the Dominion doing the honors, while employees and directors of the company also remembered the occasion.

Mr. Millen, who is joint manager with Mr. W. H. Rowley of the E. B. Eddy Company, was born at Glens Falls, N.Y., and fought in the American Civil War. In 1866 he came to Hull on a visit and there met the late E. B. Eddy, who, shrewd business man that he was, saw that Mr. Millen would make a valuable addition to his forces. Since his connection with the firm, Mr. Millen has invented a number of useful time and labor-saving devices, which are now incorporated in the Eddy plant and is now superintending the extensive alterations and additions which are being made in its power facilities.

No additions will be made to the plant of J. W. Woods, Limited, which on January 1 amalgamates with the Smart Bag Company, of Montreal, just at present, and none of the paper and other bags which the new concern will manufacture will be made at the Ottawa plant, your correspondent learns. The authorized capital of the new company is $5,000,000, and, according to present arrangements, Col. Charles A. Smart, of Montreal, will be president and managing director, and Col. J. W. Woods of Ottawa, a vice-president. The two companies which go to make up the amalgamation will be bought in as going concerns.

The Woods concern has factories at Hull and agencies at Montreal, Winnipeg, Calgary and Vancouver, while the Smart Bag Company has factories for the manufacture of paper bags in Toronto, Montreal and Winnipeg.

Mr. N. G. Guthrie, to whom was entrusted the shippers' case against the Canadian railroads when the latter applied to the Railway Commission some months ago for permission to increase their rates on pulp wood from Ontario, Quebec and the Maritime Provinces to New York State, has put in a written statement as requested by the Board and judgment is awaited at any time now. The pulp men consider they have a strong case, and that the railways cannot justify the increase unless the Board takes into consideration the difference between eastern and western railway rates, which is at present the subject of inquiry, and allows the higher rates as a matter of equalization in this regard.

Of interest to shippers and consignees of pulp and paper are the new cartage rates fixed by the Railway Commission this week. The new rates are 50 cents per ton and 15 cents for what are known as "smalls." The former rate was 40 cents, and the railway had applied for permission to increase them to 60 cents at Toronto, Hamilton and Montreal, and 50 cents at smaller points. During the hearing of the application it was hinted by some of the railroad witnesses that the roads might abolish cartage facilities altogether.

No action in regard to the placing of a Federal export duty on pulp wood to United States is likely to be taken by the Government until March. The Budget Speech, your correspondent learns, will be then delivered when the Government will probably decide whether it will accede to the wishes of the deputation which saw it in this regard some months ago.

Shippers of pulp, pulp wood and paper are uniting with those in other lines of trade in a movement to have reciprocal demurrage, that is a system of demurrage charges which will fine the railway as well as the shipper for delay in unloading cars, instituted by the Dominion Railway Commission. The new demurrage charges fixed last month by the Board are $2 for the first day beyond the free time allowed, and $3 for every day afterwards. The former rate was $1.

Much interest is being taken locally in the demonstration at the United States Forest Products Laboratory, at Wausau, Wis., of the fact that jack pine pulp may be used for the manufacture of news print paper. There is much jack pine in Eastern Canada on land which has been cut or burnt over until the more valuable woods have been driven out, according to Conservation Commission statistics.

The last issue of the Dominion Trade and Commerce Department Bulletin contains a trade inquiry from manufacturers' agents in Calgary who desire to get in touch with Canadian manufacturers of commercial and correspondence papers and stationery specialties and novelties.

A national park to take in hundreds of acres of wooded land between the Gatineau and Coulonge Rivers, in Quebec Province, has been favored by the Ottawa municipal authorities and is meeting with much favor by residents of the nearby district and Government officials. Mr. W. H. Rowley, joint manager of the E. B. Eddy Company, in a recent interview, expressed his approval of the plan while other lumbermen of the district favor it as a conservation measure. There are a number of private interests to be dealt with first, however.

"MacCORMACK."

EXPLOSION AT LAURENTIDE MILL.

A terrific explosion occurred in the sulphite mill of the Laurentide Co., Limited, at Grand Mere, Que., on December 23rd. A fourth 48-ft. digester, under construction by the Manitowock Engineering Works had just been completed, and it was during the test that the explosion occurred. The theory at the mill is that the excessive cold weather affected the boiler plate, causing weakness. The new extensions to the buildings under construction were completely destroyed, and the three digesters disabled, though not seriously injured. Portion of the screen room was injured as well, but the total loss only amounts to about $100,000, which is entirely covered by insurance. Four helpers, D. Dessureault, Adelard Berthiaume, Luc Landry and J. Trepanier were killed, and slight injuries were sustained by two others, but work on the ground wood and paper mills only suffered a day's interruption. Mr. C. C. Hockley is superintendent of the sulphite mill, which position he has held for some years. He came to Grand Mere from Shawinigan Falls as civil engineer, later being given charge of this mill. Under him the sulphite mill has been greatly improved and enlarged and is one of the most progressive plants making news fibre. We lament this mishap, as an interruption in his very fine production record.

MONTREAL PULP AND PAPER MATTERS.

(Special to the Pulp and Paper Magazine.)

Montreal, December 20th, 1912.

A year end review of the conditions in the pulp and paper trade may be briefly summarized as being "very good." All the paper mills are as busy as they can be, and the new mills which commenced operations this year seem to have sufficient business to keep them going at full capacity. There are dangers, however, that the industry is being over-capitalized, and over-production will cause a serious shrinkage. The attention which has been turned to the manufacture of news paper, has excited the imagination of promoters and financiers, with the result that new mills are being started up when there is absolutely no reason for them being in existence. People with spruce lands and undeveloped water power naturally turn to paper making as the first means of realizing on their forest lands and water falls. However, if many more mills are projected and the product placed on the market, it will be most unwise, and will prove injurious to the established mills. Already in the United States there has been a decrease of $3.00 per ton in the price of news paper since last year. This is due to the over-production. As it is in the United States market in which any new production of paper must find an outlet, paper manufacturers and promoters of paper companies should be very wary about starting new mills. So far the increased production has not affected the price in Canada, but a reaction is bound to follow if the over-production keeps up.

As compared with a year ago, sulphite in Canada is plentiful, but is selling at from $5.00 to $6.00 per ton higher than a year ago and from $7.00 to $8.00 higher than it was at the end of 1910. It is expected, however, that in another two years it will be down $7.00 or $8.00 below present prices. Prices for news are about the same as they were a year ago, but ground wood is lower owing to the greater production in the United States and the increase in the production in Canada. During the past year Canada practically increased her production of paper by 500 tons per day and increased her production of ground wood from 400 to 500 tons per day. This increase in paper and ground wood makes a difference against ground wood of almost 800 tons per day, and as the United States took 300 tons per day less this fall than a year ago, it is easy to see that the ground wood market is in a bad condition. As a matter of fact, the Eastern Canada Power & Pulp Company has gone into liquidation, chiefly because it was unable to sell ground wood at a profit. The company have heavy overhead interest charges amounting to about $4.00 per ton. This combined with low prices and over-production, has forced them into liquidation, and a meeting of the stock holders and bond holders will be held on the 27th of this month.

Another factor which is making ground wood cheaper in Canada is the development taking place in Newfoundland. From that colony large quantities of ground wood are being exported to the United States, where it is competing with Canadian ground wood and causing a lowering in values. The only favorable feature in connection with the ground wood situation is that wood in Europe is scarce, and as the freight rates are abnormally high between the various European countries, the probability is that the demand from European sources for ground wood during 1913 will help Canada to a considerable extent. The development in connection with news mills is that the present production is sufficient to supply the demand for at least another five years. On the other side, the International Paper Company are curtailing their output of news by 400 tons per day and are making other lines of paper. In Canada the increase in news daily this year was 50 0tons, and will shortly be increased to 600 tons, as a number of new mills will start manufacturing early in 1913. This is likely to cause a shrinkage in present values.

Sulphite which has all along been the strong feature of the market is also threatened with lower prices. While fewer companies have started up in the sulphite business, there seems a tendency now to go into this branch of the business. The York Lumber Company, owning 1,200 square miles in Gaspe, are forming a partnership with the Hillyard Company, who own some 800 square miles on Bay Chaleur, and between them will erect a sulphite mill with a 100-ton per day capacity. If this is repeated very often, the price of sulphite will fall. One prominent paper manufacturer said:

"The people led by promoters and financiers have gone crazy over pulp and paper manufacturing. They have heard that paper can be manufactured more cheaply here than in the United States and that the established mills have been making money, and believe that they should go in and start more mills and help share in the fortunes which are being made. They forget that the established paper mills have had many lean years, and are apt to have lean years in future. They also forget that the Americans are apt to cut the prices to such a figure that Canadians will hardly be able to compete with them. If the Americans find that the Canadians are still competing, they will go to their Government and secure additional protection, as they will be able to point out that the industry in the United States is unable to make headway. The Government will then put a duty on Canadian paper, and the new mills in this country will be in a bad way."

Summing up the year's business, it is found that the increase in the output of paper has been very marked, and while the Canadian news papers have been increasing in size and in number, the Canadian market will not begin to take care of the output. Already in the United States there is a drop in values, which soon must affect Canadian paper men. Prices at present in Canada, with the exception of ground wood, are as good or better than a year ago, but the indications are that they will soon tend towards lower levels.

J. C. R.

A deputation from the Canadian Forestry Association, including Senator Bostock, of Ottawa, W. C. J. Hall, of Quebec, Elwood Wilson of Grand Mere, Que., Denis Murphy, Geo. Murphy and others of Ottawa, waited upon the Dominion Government last month urging that the resolutions passed at the Victoria Convention be acted upon. They had to do with the proper disposal of tree tops and debris after lumbering operations, prevention of settlement on land only adapted to forest, establishment of additional forest reserves, and others. Right Hon. R. L. Borden and Hon. Robt. Rogers promised consideration.

SUBSCRIBE FOR THE UP-TO-DATE TRADE JOURNAL, PULP AND PAPER MAGAZINE OF CANADA

PULP AND PAPER TRADE OF CANADA

The following table shows in brief summarized form the exports of pulp and paper, etc., from and the imports of the same into Canada from the principal countries with which Canada trades in these items. It should be noted, however, that in newsprint there has been a very large increase both in production and in exportation, and that the chief part of this increase has taken place during the last few months in a period later than the figures summarized. Last October, for example, Canada's export to the United States was 16,234,000 lbs., as against 5,687,000 lbs. in October, 1911. United States' estimates show for the ten months ending October 31st, imports of news from Canada amounted to 127,269,000 lbs., compared with 92,147,000 lbs. in 1911. For this, of course ,the opening up of new mills and the extension of previously existing ones is mainly responsible, together with the natural development of trade with the United States as a result of easier access to the United States market. At the same time, that is, during the last six months, there has been a very material increase in the imports of paper into Canada, the increase being estimated at nearly $1,000,000 during that period.

The figures given are for the fiscal years of 1910, 1911 and 1912.

		1910	1911	1912
Books and periodicals, including labels, maps, charts, advertising folders, etc.		$940,631	$980,061	$1,193,391
Ink		39,120	36,721	40,052
Paper, and manufactures of (albumenized and other papers and films chemically prepared for photographers' use)		58,068	74,266	105,050
Bags or sacks, printed or not		2,604	5,748	8,465
Card board, not pasted or coated		3,792	4,488	8,995
Cards for playing		45,933	51,517	53,921
Envelopes		16,717	16,307	18,244
Hangings, or wall paper, including borders		48,247	56,936	61,659
Mill board, not coated or pasted		3,294	8,452	13,310
Pads, not printed, papier mache ware N. O. P., papeteries and manufacturers of paper, N. O. P.		228,280	286,790	345,285
Printing paper		222,991	307,501	264,055
Ruled, border and coated papers and boxed papers		40,093	55,565	87,508
Tarred paper and other building paper N. O. P.		1,836	695	4,444
Wrapping paper		5,833	18,253	24,358
All other	Dutiable	350,353	460,709	518,062
All other	Free	4,328	1,121	2,084
Totals, paper and manufacturers of	Dutiable	1,028,041	1,347,227	1,513,356
	Free	4,328	1,121	2,084
Rags of cotton, linen, jute, hemp and woolen, paper waste, clippings, etc.		171,358	242,493	176,365
Wood pulp		1,112	4,088	14,861

Exports to Great Britain.

	1910	1911	1912
Books, photos, etc.	$87,605	$163,369	$106,960
Paper—			
Felt	165	352	138
Printing	527,851	306,248	255,212
Other, N. E. S.	385,397	534,760	358,290
Wall paper	119	171	47
Totals, paper	913,532	841,531	613,687

Imports from Germany.

		1910	1911	1912
Books, periodicals, advertising folders, etc.		$53,553	$58,808	$68,034
Papers and manufactures of—				
Hangings of wall paper, including borders		10,072	14,105	10,567
Paper, photographic, plain basic, baryta coated, adapted for use exclusively in the manufacture of albumenized or sensitized paper	Free	18,989	11,573	16,208
Printing paper		1,390	3,703	899
Ruled and bordered and coated papers; boxed papers and papeteries		1,503	5,889	12,648
Wrapping paper		1,434	1,559	7,907
All other		68,422	139,744	146,188
Totals, paper and manufactures of	Dutiable	82,821	165,000	178,209
	Free	18,989	11,573	16,208

Exports to Germany.

	1910	1911	1912
Books, etc.	$1,057	$767	$1,178

Imports from United States.

		1910	1911	1912
Books, periodicals, advertising folders, etc.	Dutiable	$1,726,432	$2,019,924	$2,362,997
	Free	1,138,211	1,307,234	1,454,097
Ink		133,140	113,296	102,869
Paper and manufactures of—				
Album insides, made of paper		63	427	200
Albumenized and other papers and films chemically prepared for photographers' use.		76,059	82,298	92,832
Bags or sacks, printed or not		23,170	21,682	44,114
Cards for playing		30,341	37,385	53,885
Card board, not pasted or coated		22,866	37,042	61,494
Envelopes		61,715	67,321	71,669
Felt board		8,907	7,156	7,122
Hangings or wall paper, including borders		206,662	228,394	257,430
Leather board, leatheroid and manufacturers of, N. O. P.		31,741	26,751	47,511
Mill board, not coated or pasted		44,107	48,027	44,598
Pads, not printed, and papier mache ware, N. O. P.		4,462	2,223	9,148
Paper, manufactures of, N. O. P.		979,641	1,116,898	1,284,467
Paper, matrix, not being tissue paper, for use in printing		6,436	7,844	9,629
Paper, photographic, plain basic, baryta coated, adapted for use exclusively in the manufacture of albumnized or sensitized paper		22,459	44,669	41,961
Paper tubes and cones of all sizes adapted for winding yarn thereon		10,159	14,810	16,440
Patterns, boot and shoe, manufacturers of paper		2,599	9,437	23,051
Printing paper		234,780	379,534	489,555
Ruled and bordered and coated and boxed papers and papeteries		99,343	125,149	156,367
Straw board not pasted or coated		25,779	52,297	57,921
Tarred paper and other building paper N. O. P.		345,213	394,411	467,095
Twine or yarn of paper imported by manufacturers for the purpose of being woven into fabrics		898	1,228	235
Union collar cloth paper, in rolls or sheets, glossed or finished		138	.....	564
Union collar cloth paper, in rolls or sheets, not glossed or finished		1,580	1,282	40
Window blinds of paper of all kinds		.....	37	194
Wrapping paper		58,102	54,486	62,968
All other		927,190	903,444	916,445
Totals, paper and manufactures of	Dutiable	3,184,395	3,595,254	4,148,470
	Free	40,015	68,978	72,750
Rags of cotton, linen, jute, hemp, woolen, paper, waste and clippings.	Free	682,149	700,021	846,336
Wood pulp		32,456	38,662	49,991

Exports to United States.

	1910	1911	1912
Paper			
Felt	$ 5,381	$ 2,171	$ 5,253
Printing	1,246,822	1,962,832	1,989,863
Wrapping	104	1,183	68
Other, N. E. S.	65,106	104,388	84,552
Wall paper	2,128	5,315	6,568
Totals, paper	1,319,541	2,075,889	2,086,304
Stationery	8,156	10,909	11,833
Wood pulp—			
Chemically prepared	1,597,319	1,298,162	1,585,615
Mechanically ground	2,577,990	3,796,427	2,834,329

Imports from France.

		1910	1911	1912
Books, periodicals, etc.		$146,106	$145,289	$184,038
Ink		6,309	2,319	4,697
Paper and manufactures of—				
Hangings of wall paper, including borders		6,796	6,937	9,354
All other	Dutiable	62,108	79,559	83,405
	Free	1,934	829	753
Totals, paper and manufactures of	Dutiable	68,904	86,496	92,759
	Free	1,934	829	753

Exports to France.

	1910	1911	1912
Books, pamphlets, etc.	$1,837	$2,781	$10,045
Wood pulp	62,316	120,417	.....

Total Imports into Canada from All Countries.

		For the six months ending Sept. 30. 1910	1911	1912
Books, periodicals and other printed matter	Dutiable	$1,262,828	$1,568,144	$1,915,221
	Free	892,430	994,395	1,183,931
Ink		76,730	71,978	81,123
Paper and manufactures of albumenized and other papers and films chemically prepared for photographers' use		99,489	123,556	128,376
Cards for playing		44,766	46.488	63,065
Hangings of wall paper, including borders		86,317	102,809	135,509
Printing paper		317,119	339,392	382,854
Ruled and bordered and coated papers; boxed papers and papeteries		108,657	132,658	158,856
Tarred paper and other building paper, N. O. P.		227,826	245,097	357,710
Wrapping paper		50,296	67,113	106,640
Paper, other	Dutiable	1.713,318	1,846,344	2,537,768
	Free	38,062	46,093	73,216
Wood pulp		26,792	56,247	104,524

Total Exports from Canada to Other Countries.

Books, pamphlets, maps, photos, etc.	Canadian produce	$ 161,351	$ 143,782	$ 164,181
	Foreign produce	52,767	50,080	120,861
Printing paper	Canadian produce	1.549,528	1,447,555	1,978,681
	Foreign produce	1,381	7,033	.....
Wall paper	Canadian produce	10,206	14,475	19,506
	Foreign produce	3.206	272	360
Other paper	Canadian produce	393,652	309,599	216,872
	Foreign produce	14.091	11,815	11,094
Wood for pulp		4,115,587	3,157,580	3,626,306
Wood pulp		2,458,848	2,363 943	2,627,607

RECENT PATENTS AND INVENTIONS

Of Interest to Those Engaged in the Pulp and Paper Industries

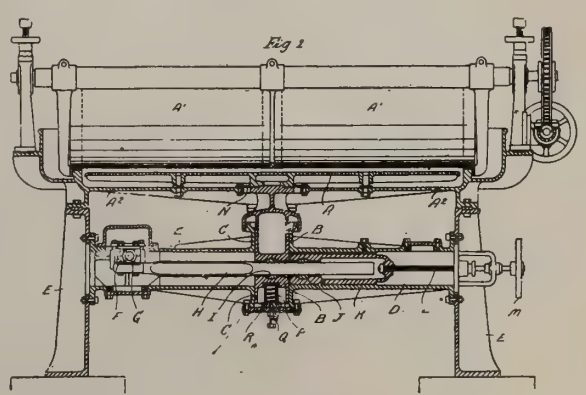
Improvements in Pulp Straining Machines.

An invention relating to machines for straining pulp has been patented in Great Britain by John White and Francis Wm. Gray, engineers, both of James Bertram & Son, Ltd., Edinburgh.

This invention relates to machines for straining paper pulp, of the type wherein the diaphragm derives a variable to-and-fro movement from a vibratory member connected to a rotary crank or the like. The invention consists in a mechanism the essential elements of which are enclosed in an oil bath, and including means independent of the connection of the vibratory member to the crank or the like for varying the action of said member on the diaphragm. The improvements while applicable to pulp strainers generally are more particularly designed for use with strainers of the stationary or oscillatory drum type referred to in the Specification of prior Patent No. 8599 of 1910.

In the accompanying drawings Fig. 1 is a part elevation, part longitudinal vertical section, showing by way of example the improvements applied to a pulp straining machine of the type in which the straining vessel remains stationary while the pulsating diaphragm is being operated. Figs. 2 and 3 show modifications.

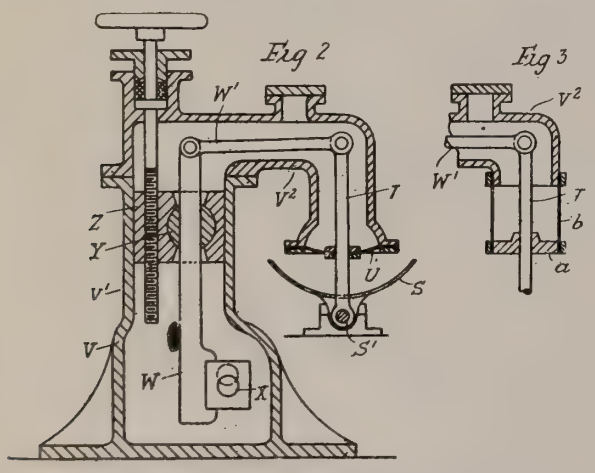
Referring to Fig. 1 of the drawings, a pulsating diaphragm A is interposed between the straining vessel (A1) and the vat (A2) and is connected to and operated by a piston or plunger (B) carried downwardly into a preferably cylindrical guide (C) formed in a hollow chamber (D) extending horizontally under the vat (A2), and secured to the supporting standards (E), at each end of the machine, the chamber (D) forming an oil bath enclosing all the working parts. To-and-fro motion is imparted to the diaphragm (A) preferably by a rotating shaft (F) and crank (G) located at one end of said chamber (D) and a connecting rod (H) which extends from said crank through a rocking member (I)



in the piston or plunger (B), and through a second rocking member (J) serving as a movable fulcrum. This member (J) is fitted in a saddle (K) guided in the chamber (D) and adapted to be traversed horizontally within said chamber preferably by means of a screw-threaded shaft (L) operated

means of an external handwheel (M), so that the position of the member (J) may be adjusted relatively to the crank (G) and the rocking member (I). By this arrangement the connecting rod (H) to which is imparted a vibratory movement constituted by a combined reciprocatory and swinging movement on the member (J) transmits to the plunger (B) a short vertical reciprocatory movement, the stroke of which varies according to the distance between the member (J) and the crank (G); and, as the position of the member (J) can be altered without stopping the machine, the stroke of the diaphragm (A) can be increased or diminished while the machine is in motion. The usual flexible water-tight connection (N) is provided between the bottom of the strainer vat (A2) and the pulsating diaphragm (A), and in order to support partially the weight of the diaphragm and its actuating plunger (B) a spring (P) co-acting with an adjusting screw (Q) and plate (R) is inserted in the lower part of the chamber (D).

To-and-fro motion may be imparted to the diaphragm (A) directly from below, as described, or in other types of strainers, having, for example, an oscillating diaphragm (S), Fig. 2, fixed on a spindle (S1) operated from an overhead rod (T). The said rod (T) is carried through a flexible oil-tight diaphragm (U) closing one end of a casing (V) constituting an oil bath and encasing suitable articulated or linked connections from a connecting rod (W) actuated by means of a rotating crank (X) and extending through an adjustable fulcrum member (Y). As shown, the connecting rod (W) is arranged vertically, and the fulcrum member (Y) is mounted on a block (Z) fitted to slide in a vertical part (V1) of the casing (V), while a link (W1) serving to



couple the connecting rod (W) to the said rod (T) extends along a horizontal or overhanging hollow arm (V2) of the casing (V).

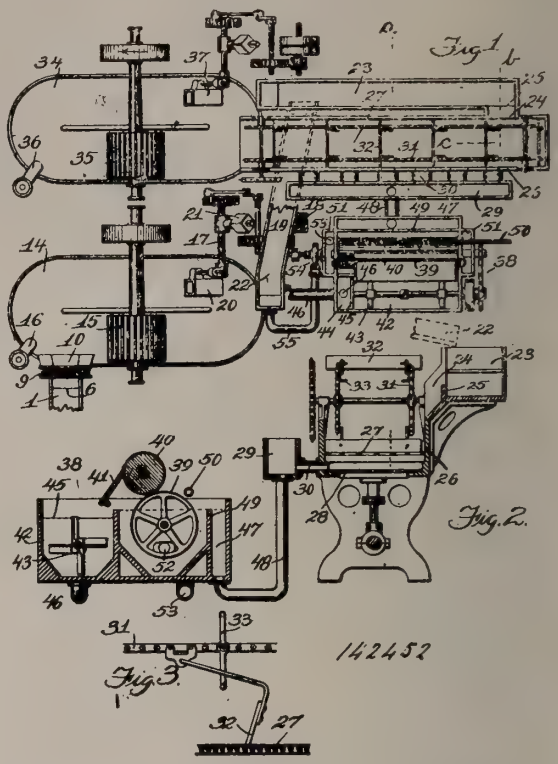
In a modification shown in Fig. 3, the said rod (T) is passed through a cover (A) supported by a flexible sleeve (B) adapted to be secured to said arm (V_2).

The vat and diaphragm of the strainer may be constructed and arranged as described in the Specification of our Patent No. 8599 of 1910, but by preference the straining vessel, instead of moving backwards and forwards, is stationary when the diaphragm is in action.

* * * *

Canadian Patent No. 142452, Pulp Machine.—C. W. Shartle, Middleton, O.

This is a pulp-reducing apparatus, comprising (as Boorill be seen from the illustration), a beating engine, Woodapted to reduce pulp to the desired degree of fineness, a screen adapted so as to have pass through it pulp of proper fineness and to discharge coarse tailings back into the beating engine, transfer mechanism

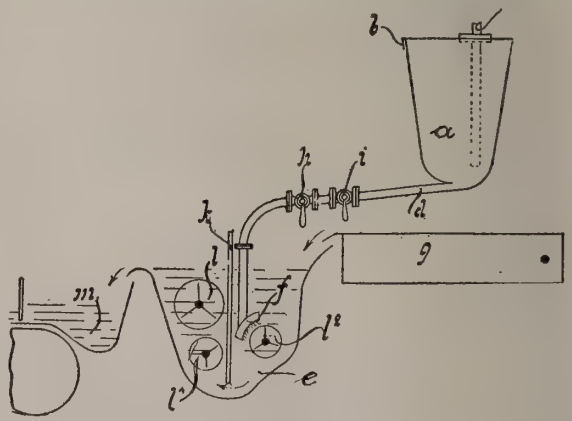


adapted to remove material from the beating engine and deliver it to the screen, means for supplying the beating engine with water, a cylinder machine, means for transferring to the cylinder machine the pulp and water which has passed through the screen, and means for transferring to the screen the water which has been extracted from the pulp by the cylinder machine.

* * * *

APPARATUS FOR COLORING PULP.

L. Skark, of Saybusch-Zywiec, Austria, has invented an apparatus for coloring pulp. The illustration shows the general principles of the idea. From an elevated receptacle, a, equipped with a close-fitting cover, b and a tube c for obtaining a uniform pressure, the color solution is conducted through the spraying pipe f, and



mixes here with the liquid pulp coming from the stuff box.

If several dye solutions are to be used, several of these receptacles a with special cocks, opening into a stirring box may be arranged and the dye solution is conducted from here into the pipe conduit d, whence,

through the spray-pipe f, it enters the receptacle e and thereby is mixed with the liquid pulp.

In the pipe d two cocks h and i are introduced; the cock h is intended to regulate exactly the admission of the dye, whereas, by means of the cock i, the entrance of color may be instantly interrupted.

The receptacle e is divided by means of the partition k so that the stuff coming from the box g is compelled to pass downward, around the walk k. By this means, with the aid of the flanged shafts l, l_1 and l_2, the pulp is intimately mixed with the dyestuff, after which, the now perfectly colored liquid pulp flows on to the running wire.

JUDGING THE LENGTH OF FIBRES.

It has been the practice of most paper-makers to judge the length of fibres by squeezing a handful of the stock and noting the length of the shortest fibres visible. In the opinion of a writer in Paper Trade Journal, the habit of judging the length of fibre by feeling the stock as it flows from the outlet of the Jordan is all wrong, because the feel of the stock depends more on the amount of water present than it does on the length of the fibre. For instance, a large quantity of water is emptied into the chest from the beater, the stock going through the Jordan will be thin and even short stuff at this time will feel long because of its thinness. Exactly the opposite will be experienced when the stock passes through—at this time very long fibres will feel short, for there is present a body of stuff instead of three parts of water. The quality of fibre also misleads when judging the length of fibre by the feel of the hand, and hard fibres when short will feel long, while soft fibres when long really feel short. The use of clay, alum and size is also a factor which often causes the beaterman to go astray in judging the length of fibres. The safe and sane way is to become accustomed to judging the fibres by sight, and this can be accomplished by taking a small hand dipper and putting in a certain amount of fibres from the Jordan and sufficient water to thin and separate the fibres, so their length can be observed.

There are several methods of determining the wetness of stock while preparing it for the machine; probably the most ordinary is to take a handful of it from the beaters and by squeezing it and noting the amount of water which drains from it. A more accurate idea is obtained, however, in the following manner:—

Weighed samples are taken from the beaters and each is drained on a piece of wirecloth of known mesh. A certain length of time after the draining the samples are again weighed and then dried bone dry and weighed again. The amount of water retained after draining, in comparison with the dry weight of stock, makes the figure from which relative wetness can be obtained. Care should be taken when making the above tests to have all conditions as nearly alike as possible. Still another method is feasible by taking from the beater a certain quantity of the stock and placing it in a specially constructed box, the cover of which can be pressed upon the stock to desired measurements. The quantity of water forced from the stock by pressure of cover is measured, and a very fair idea of the wetness of the stock is had.

SOME IMPRESSIONS OF CANADA.

By Robt. J. Marx, of London.

This is by no means my first visit to the Dominion. I came here on a flying trip more than 15 years ago—a short period in the development of a country—yet how enormous the changes which have taken place in the pulp and paper industry since then! In those years, pulp, and especially ground wood, was looked upon as the alpha and omega of the trade. Timber in suitable quality everywhere in abundance, water power obtainable by just asking for it, labor about as scarce then but only needed in a small measure. Canada at that time bade fair to become the general provider of ground wood pulp for the world's largest markets. To-day pulp mills are looked upon as a kind of accessory to your paper mills. In fact, the birth of every new pulp scheme raises now at once speculative thoughts as to when the erection of the inevitable paper mill is likely to follow.

We from the "Old Country" cannot think in thousands of square miles of timberland as quickly as you can, and I personally shall always be impressed by the vastness and grandeur of Canada, however familiar repeated visits may have made me with its great natural wealth and the resources of its inhabitants.

To the uninitiated your achievements may appear an easy vistory and indeed no fundamental changes have been imported by Canada into the art of making paper. The general principles of the old text book recipes still hold good. Yet the work done has been of great magnitude and the success due to the skilful acclimatization of means and methods to the requirements and necessities of the country. Even the very best European paper mill, if bodily transplanted into Canada and located in an ideal spot wher timber and power are abundant would be doomed to failure. What strikes me particularly in Canadian paper mills is the simple means employed to attain the object in view. I think as far as labor is concerned there is no country in the world which can produce a given reel of paper with fewer hands than you do, nor any place where the task of the attendants is made lighter for them, yet you continue to make the process of manufacture more and more automatic.

You are satisfied to produce to-day grades of paper which fill the demand, but competition, which becomes keener every day, may soon make it desirable to obtain from your raw material as good a sheet as is commercially possible. Your wealth is such that you can afford to smile at the waste of fibres and material which flows down every river on which paper mills are located. For some little time I have tried in a modest way to help you by the introduction of my various special devices to improve the standard of quality and to reduce the wastage in your mills, and, thanks to the enterprise and open mind of those in charge, I have not been entirely unsuccessful. I much like to be with you and hope to cultivate our connection to mutual advantage. A friendly hand has been extended to me everywhere and in readily complying with your desire for a silhouetted impresion I trust you will permit me to wish the Pulp and Paper Magazine of Canada, as well as the "Industry" the very top of a happy and prosperous New Year.

TRADE AND MANUFACTURERS' NOTES

THE ASHCROFT PAPER TESTER.

The latest development in paper testers is a small compact instrument 1½ inches thick, 4⅜ inches long, and 3¾ inches high, and is being marketed by the Ashcroft Manufacturing Co., 85-87-89 Liberty Street, New York, well known as manufacturers of instruments of precision for over half a century.

In design, this instrument is a radical departure from those now in general use. In several features it differs entirely from any other paper testing instrument.

The base of the tester is made in two sections, the lower of which is a swivel plate, which opens at right angles to the instrument. This plate automatically locks in position, both when closed, or when open, and is released in both cases, by means of a push button, set in the swivel end of the plate. When open, the plate enables the operator to hold the instrument steady with the left hand, while the operating crank is turned with the right. Small rubber pads are secured to the bottom of the instrument, both to prevent it marring the surface of a highly polished desk or table, and to prevent the tester slipping while in operation.

Paper to be tested is inserted in the clamp, and secured by turning knurled disc to the right. This feature deserves more than passing mention; the clamp is so constructed, that very small samples of paper, such as are often attached to a letter, may be tested. The clamp is part of a metal arm, having an upward and downward movement, controlled by the operating crank. This clamping arm operates independently of those parts registering the strength. For this reason, any friction developed in this part of the movement, when making tests, will have no effect upon the result registered.

The bursting of the paper is accomplished by means of a metal plunger, the top of which is not crowned as in other metal plunger paper testers heretofore designed, but is cupper out, so that the paper is really broken over a ring about ¼-inch diameter.

The plunger is freely mounted, and does not slide in a guide, thus the movement of this part is accomplished without friction and the possibility of error from this cause is entirely eliminated. It is not capable of movement except when in contact with the paper being tested.

When the operating crank is turned, preferably by means of the index finger, the entire clamping arm including the disc of clamped paper, is forced downwards and the paper is imposed on the plunger, which deflects until the maximum resistance of the paper is reached, when it again assumes normal position.

The resistance, or bursting strength of the paper is indicated upon the dial in pounds per square inch. The indicating hand starts to circle dial at the moment the paper is imposed upon the plunger, and stops the instant the paper breaks. The cup, or ring shaped plunger used in the Ashcroft Paper Tester is claimed to be the result of an elaborate series of experiments conducted by the engineers of the Ashcroft Manufacturing Co., in an endeavor to develop some means of breaking the paper that would not present the disadvantages incidental to the use of rubber diaphragms, clamped in a surface equal to one square inch; the paper being tested by same, will naturally start to break in the centre of the circle, in other words, in the case of a rubber diaphragm, equal resistance is not exerted over the entire surface of the paper being tested, but is exercised first in the centre of the clamped circle. In case the diaphragm is not flat when in contact with the paper, but lays in wrinkles, as is the case when the diaphragm has been used for some little time, the pressure will be very unevenly distributed. These two points cause more or less inaccuracy in results and aside from the deterioration of the rubber, form a serious drawback to the use of rubber diaphragms.

On the other hand, a metal plunger with a crown top allows the paper to stretch over the crown, while the test is being made, and in the case of papers having long stretchy fibres, the tests include not only the bursting strength, but also a certain amount of pull, the result being probably a compound expression, including as chief factors, the average tensile strength the stretch or elasticity of the paper, and the relative distribution of the fibres.

The cup or ring shaped plunger as used in the Ashcroft Paper Tester, however, is claimed to eliminate all of these errors. It presents a flat surface to the paper being tested, but not, however, as though the top of the plunger were solid. The paper forced over the rim of the plunger is in contact with the plunger only across its rim, which is very near the edge of the clamped circle of paper. As increased pressure is exerted on the rim of the plunger by the paper, the fibres over the cup are pulled apart in somewhat the same manner as in a tensile strength machine using strips of paper.

The extremely small size of the plunger is one point upon which there will doubtless be considerable controversy. The Ashcroft Manufacturing Co., however, claims that of all sizes of plungers from 1 inch in diameter down to ⅛-inch, the size adopted (¼-inch) gave the most uniform results on every class of paper. It is apparently a case of not what it is and why it is, but what it will do, and will doubtless be accepted on some such basis.

It is claimed the Ashcroft Paper Tester contains no element subject to deterioration, and that it will remain accurate for many years, without readjusting.

If all the claims brought forward in behalf of this instrument are justified, it will undoubtedly meet with great success. It would seem as if the points claimed are sufficiently important to warrant a thorough examination of the instrument by the testing bureaus of the larger mills and laboratories.

CAPITAL WIRE CLOTH AND MANUFACTURING COMPANY, LIMITED.

The above company have opened an initial installation of four loom, soon to commence manufacturing in Canada, Fourdrinier wires, wire cloth, dandy rolls, and cylinder moulds.

The following personnel of the new company assure its success:

President—J. R. Buchanan, 16 years manager of sales for the Appleton Wire Works, and a practical wire man.

Vice-President—Fred. F. Haefs, machinist and loom builder, from same firm.

Secretary-Treasurer—Joseph W. Perazzo, wire expert, having past connections with William Cabble Excelsior Wire Works, the Eastwood Co., and Appleton Wire Works.

Superintendent—M. L. Peebles, steam and electrical engineer and patentee of numerous loom improvements.

Managing Director—Wm. Buchanan, formerly of DeWitt Wire Cloth Co., Eastwood Company, Cheney-Bigelow Wire Works, and for the last sixteen years general manager of the Appleton Wire Works, Appleton, Wis., having had in all fifty-eight years' experience in the business.

Their widest loom is 220 inches, so they are in a position to make wires of any width, in which they use their own metal formulae.

Already business is assured to almost double the initial capacity of the plant, which is a good omen for future success. This firm was attracted to Ottawa by the representation of the Publicity and Industrial Bureau, one of the best organizations of its kind in Canada.

PULP AND PAPER MARKETS

Toronto, Dec. 30, 1912.

In the early part of the month there was some slackening in the enormous demand for newsprint, and some pointed to the greatly increased capacity of the mills of which the lengthy article on progress, given on another page is evidence enough, as a cause. Since then, however, the market has picked up again, and although there has been some revision of prices in order to find a market in certain large United States centres, there appears to be but little diminution now either in the price or the briskness of the demand. The Canadian product has displaced a considerable quantity in the American markets, but great trade has been the rule.

The book and writing mills are not complaining. In the former there was a trace of quietness in the earlier part of the month, but both are now experiencing very favorable conditions, and higher prices for the near future are considered likely by some in the trade.

Wrappings retain the comparative strength which has now been enjoyed for some months, although it is still felt prices should be higher in order to enjoy a legitimate share of profit. Bags also have become firmer in tone.

The demand from the United States for groundwood pulp has been unusually small for a long time past, owing to the satisfactory water conditions in their own mills. A slight improvement in enquiries, however, is reported in some quarters. Meantime the manufacturers are not anxious, but continue to make and pile large quantities in readiness for the demand, which they feel is sure to spring up before the end of winter.

Sulphite seems to be stronger than ever and the prices firmer.

Montreal, December 30th, 1912.

Report on conditions in this market will be found under "Montreal Correspondence" page 44.

Quotations for paper, pulp and paper stock are as follows:—

News, $43 to $44, delivered in United States.
News, $42, delivered in Canada.
News Print, rolled, $2.00.
News Print, sheets, $2.25.
Book Papers—Carload lots, No. 3, 4½ to 4¾ cts.
Book Papers—Broken lots, No. 3, 4½ to 4¾ cts.
Carload lots, No. 2, 4¾ cts.
Manilla B., 3½ cts.
Broken lots, No. 2, 5½ to 5¾ cts.
Carload lots, No. 1, 5½ to 6¼ cts.
Broken lots, No. 1, to 6¾ cts.

Wrappings.

Manilla B., 3½ to 3¾ cts.
Fibre, 3¾ to 4 cts.
No. 2 Manilla, 3½ cts.
No. 1 Manilla, 3¾ to 4¼ cts.
Kraft, 4 to 4¾ cts.

Pulp.

Ground wood (at mill), $14 to $15.
Sulphite, $46 to $47, delivered in United States.
Sulphite, $46 to $47, delivered in United States.
Sulphite, $44 to $45, delivered in Canada.
Sulphite (bleached), $51 to $53.
Sulphite (unbleached), $45 to $46.

Paper Stock.

Waste paper, f.o.b. Montreal.
No. 1 hard shavings, $1.65 to $1.75.
No. 1 soft white shavings, $1.60.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50 to 55 cts.
White blanks, 80 cts.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90 cts.
No. 2 book stock, 45 cts.
Manilla envelope cuttings, $1.05.
White envelope cuttings, $1.75.
No. 1 print Manillas, 65 cts.
Folded news, 50 cts.
Crushed news, 45 cts.
Good mixed paper, 45 to 50 cts.
Rags, old and new, per 100 lbs.,, f.o.b. Montreal.
Old white cotton, $2.50.
Mixed cottons, $1.75 to $1.90.
Light cottons, $1.90.
No. 1 white shirt cuttings, $5.00 to $5.50.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $1.75 to $2.00.
Blue overall cuttings, $3.40 to $3.50.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.5 to $1.70.
Linings, $1.0 to $1.75.
New unbleached cotton, $4.50 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.25.
New light fianelettes, $3.75 to $4.00.
Flock satinets roofing stock, 90 cts to $1.00.
Ordinary satinets, 5 cts to 75 cts.
Tailors' sweepings, 65 cts to 70 cts.

SCANDINAVIAN MARKETS.

C. E. Sontum, Canadian Trade Agent in Norway, reports that the wood pulp market is firm for all kinds. Chemical pulp shows a rising tendency, and the buyers are eager to secure larger quantities. Mechanical pulp is also very firm, although there is not any special inquiry for this, but on account of the war an increased demand for newspaper pulp is expected in the near future. It is hoped that the sulphite and pulp mills on the international market will make it possible for the Norwegian mills, in spite of the rise in the raw material ,to experience some good years, which are now very much needed. For the owners of woodlands and the populations of these districts it is of the utmost importance that the mills should be kept running with some profit.

Improved business for pulp is noted in Sweden. Foreign buyers, who have been out of the market for some time, hoping for a decline in prices, are inclined to believe this will not come for a long time, and are covering their requirements for 1913-14.

In Finland, the mechanical wood pulp market is described as satisfactory. The prices quoted at the beginning of this year have been well maintained, and most mills have no stocks worth mentioning. At the prices ruling several large contracts for protracted periods have been concluded. The output of mechanical pulp has increased considerably, a couple of new mills having been started and a few older ones being enlarged, but the market has been able to consume the increase.

THE BRITISH MARKETS.

(Special to Pulp and Paper Magazine.)

London, December 20, 1912.

The British paper trade is enjoying its full measure of prosperity. Mill owners in England and Scotland state that they are working at the highest capacity and for various grades of printings—which include news print—and writings, extra prices are demanded on new business. For some reason or other manufacturers of paper are not unanimous in combining to make a general advance in prices on all grades, and this action on their part seems all the more strange when one considers the high cost of pulps, esparto and rags. No doubt the extra cost of raw materials, and the extra taxation imposed by legislation recently, will compel all mill owners in the near future to make a substantial increase in their quotations for contracts. As things stand at present pulp men would welcome an increase in the prices of paper throughout the United Kingdom, and they say that the mills cannot drag on much longer on low rates. Meantime, the demand for paper is very brisk.

* * * *

In November, 50,705 tons of paper of all kinds, including boards, printed and coated paper, were imported into the British markets and Newfoundland's share was 2,460 tons of printings or writings or reels. This was the highest importation received from Newfoundland on record. British mill owners exported to Canada 893 tons of writings and printings—the latter total over 862 tons—which shows that the Canadian demand for printings is increasing. Canada, however, is not so much interested in the British markets as she is in the United States; the result is that she has left the field open to Scandinavian paper and German products.

* * * *

As the British paper markets are in a satisfactory condition and the mills busy, efforts are being made to meet the demands of the workers who want to cease work at noon on Saturdays and resume at 6 o'clock on the following Monday morning. A ballot of the men was taken and two-thirds are in favor of shutting down. Mill owners maintain that a week-end stop would reduce their output. For the present things are in abeyance.

* * * *

The mechanical wood pulp market is firm and the demand good. So far prices remain unchanged. Paper makers have in a good many cases satisfied their wants in 1913 at prices satisfactory to the producer. Canada has come in for a fair share of the deals. During the last few months some very large shipments of mechanical have reached England from Newfoundland and Quebec; indeed, Newfoundland is becoming an important source of supply for the British markets, the shipment for one week alone reaching 2,500 tons. Some weeks the quantity is greater.

* * * *

In November, 52,374 tons of mechanical were imported into the United Kingdom—a very great increase on the past three years—of this total Canada sent 4,270 tons, valued at £10,642. For the eleven months ending November, the total receipts was 36,294 tons, compared with 32,.13 tons in 1911, and 63,338 tons in 1909. The falling off between 1909 and 1912 is very material, it will be observed.

* * * *

The prosperous condition of the paper trade in England and Scotland very naturally causes a good request for chemical pulps of all grades. Prices are soaring higher every month and good business is passing in favor of the producer. It is reported here that the United States during the last quarter have had big dealings with Swedish and Norwegian mills, but now there is a lull and the market is quiet, but firm. London quotations are about as follows: Sulphite bleached, £11-10 to £12-10 per ton; sulphite easy bleaching 1st quality, £9 to £9-10; sulphite "news" or strong quality, £8 to £8-10; soda unbleached, 1st quality, £8 to £5; ditto, strong, £8.2.6 to £8-10. This week soda kraft was advanced, the price being from £8 to £9 per ton.

* * * *

Rags of all grades are in keen demand and prices are on the increase. Continental reports states that stocks are limited in many places. The British demand recently has been very good and the demand from Canada has also increased, owing to a reported shortage some weks ago in the coloring.

* * * *

Bleaching powder is scarce, stocks being very low and manufacturers are unable to meet with the demands. Unfortunately the war between the Balkan States and Turkey has greatly upset the chemical export trade in many respects. So far no increased prices are asked for bleaching powder.

NEW INCORPORATIONS.

The Canadian Pulp and Lumber Co., Ltd., Winnipeg; capital $1,000,000. To carry on business as electrical engineers and contractors, importers of and dealers in paper, paper materials, and paper substitutes of all kinds. L. E. and Robt. Brownell, brokers; T. R. Ferguson, barrister, all of Winnipeg.

* * * *

Ungava Miners and Traders, Limited, Montreal; capital $200,000. To carry on a wide range of operations in Ungava.

* * * *

Johnstone Strait Lumber Co., Ltd., Vancouver; capital $500,000. To manufacture lumber, etc. W. E. Burns, attorney.

* * * *

The Riordon Pulp & Paper Co., Ltd., incorporated under Dominion laws, has been formally authorized by the Ontario Government to carry on business in that Province, with a capital not exceedingly $2,000,000.

* * * *

F. N. Burt Company, Ltd., has been granted authority by the Ontario Government to increase its capital stock from $2,250,000 to $2,750,000.

* * * *

Canadian Roofing Mfg. Co., Ltd., Windsor, Ont.; capital $75,000. To manufacture and deal in roofing and shingles of all kinds, wall board and building papers, etc. L. H. Cheeseman and C. J. Cheeseman, both of Detroit; H. W. Unsworth and W. J. Barber, of Sarnia.

* * * *

Dennis Canadian Company, incorporated under Michigan laws, has been authorized to do business under Ontario laws, in acquiring, manufacturing and dealing in lumber and other forest products, with a capital not exceeding $500,000.

* * * *

J. C. Wilson, Ltd., Montreal; capital $1,000,000. To do a general pulp and paper business, develop water powers, carry on a printing and lithographing business. They will make stationery paper and specialties.

* * * *

P. Dumontier & Cie, Ltee., Quebec; capital $50,000. To do business as booksellers and binders. J. C. P. Dumontier, J. J. Bedard, F. Leclere, Quebec City.

* * * *

The Reform Suit Box Company, Ltd., Montreal, Que.; capital $50,000. To manufacture boxes, trunks, suit cases, etc., of paper, wood, pulp, straw board, etc. Thomas S. Stewart, Harold Earle Walter, advocates, Montreal, Que.

* * * *

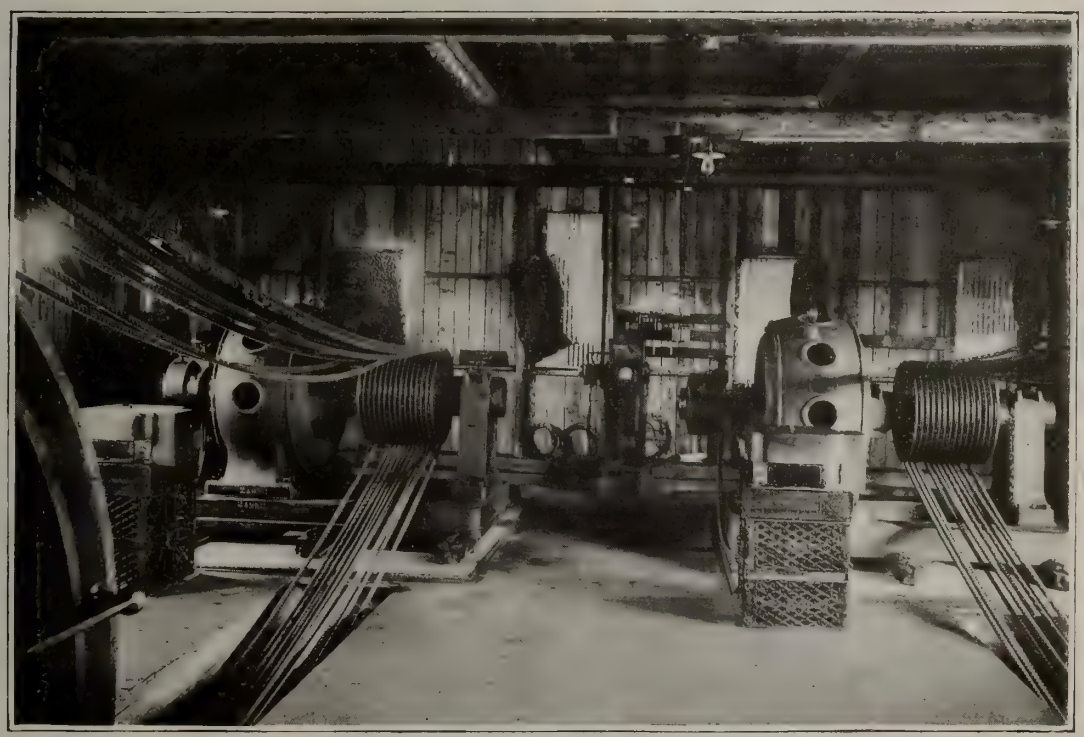
The Forest Products Company, Ltd., Peterborough, Ont.; capital $40,000. To manufacture lumber and products thereof. Henry G. Rogers, Henry G. Logan, William Henry Hull, Claude Henry Rogers, all of Peterborough, Ont. The concern has been incorporated to manufacture lumber and products of same.

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ST. JOHN RIVER COMMISSIONERS' REPORT.

The troubles arising through conflict of lumbering interests on the St. John River, in New Brunswick and Maine, seem likely shortly to be settled. It will be remembered that the differences of opinion over the use of water for driving purposes and the delays experienced at the sorting gaps have more than once resulted in violence between the American and New Brunswick lumbermen. To avoid a recurrence of the troubles, which might easily have led to very serious consequences, the Canadian and United States Governments appointed the International St. John River Commission to gather data for to serve as a basis for an amicable understnding between the rival interests.

The engineers found that with the expenditure of $471,510 for dams, the waters of the river and its tributaries can be raised to a comparatively high level, and so maintained, which would greatly facilitate log driving on the river. To raise the river to a level sufficiently high for all purposes would cost, according to the engineers, $1,273,576. To these amounts must be added the flowage damages, in some localities heavy.

In order to improve the conditions for log driving at many points along the river, from $200,000 to $300,000 might be expended at the rate of $10,000 to $15,000 annually for a series of years.

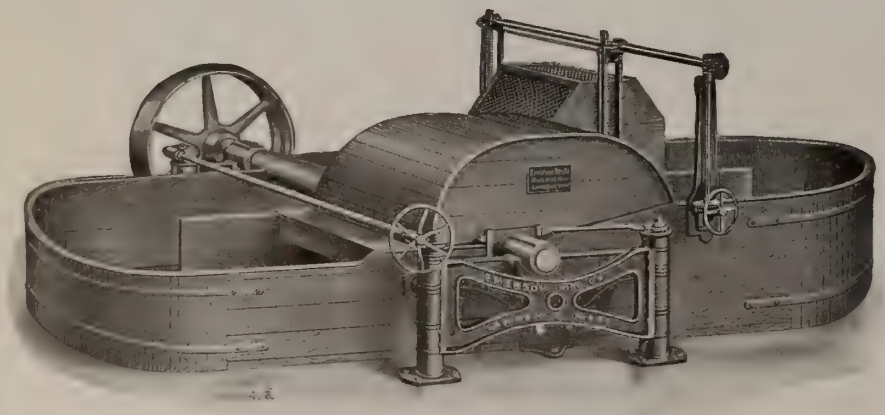
The general improvements suggested by the engineers are divided into three classes: Channel improvements, driving or flushing dams and reservoir dams. It is stated that the more the river channel can be improved the less the reservoir development will be found necessary or the greater will be the reserve of water for power purposes.

The chief improvements will consist of storing as great a portion of the spring floods as possible, thereby reducing the height of the freshet stage and forming a reserve to be used when dry weather comes, as it usually comes every summer.

Taking into consideration the matters of economy and return on investments required, the engineers suggest that instead of undertaking at once all of the improvements which have been suggested, the most feasible way is to extend them over a series of years doing that part of the work first that would appear to produce the greatest effect and halting the work when that stage of improvement has been reached, beyond which expenditures do not seem to be justified by the results to be obtained therefrom.

It should be remarked that it is not a large quantity of water that is best for driving logs, but as steady and uniform a flow as possible throughout the entire driving season. Absolute uniformity of flow cannot be obtained on the St. John River, as there are opportunities for storing only a limited proportion of the spring freshet. By the construction of the reservoir dams recommended the freshets will be materially reduced in heights, and in some of the branches will be nearly eliminated, thus reducing the expense and delay now experienced by returning to the water logs that have stranded at the height of the flood.

The report, and still more particularly the manner in which it is acted on, will be read with keen interest by the lumber and pulpwood interests.



EMERSON MANUFACTURING COMPANY

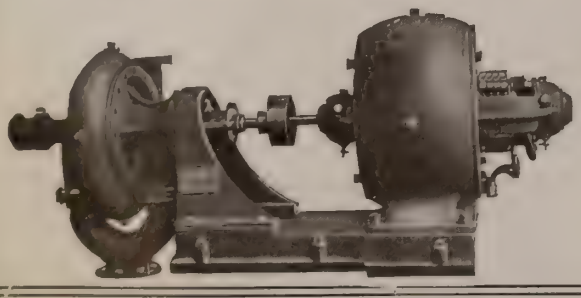
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This directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Barkers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Canadian Barker Co., Ltd., Sault Ste. Marie, Can.
Green Bay Barker Co., Green Bay, Wis.
Jenckes Mach. Co., Sherbrooke, Can.
Hamilton, Wm., Co., Peterboro, Can.
Holyoke Machine Co., Holyoke, Mass.
Waterous Engine Works, Brantford, Can.
Valley Iron Works, Appleton, Wis.

Beaters
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Holyoke Mach. Co., Holyoke, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Valley Iron Works, Appleton, Wis.
Waterous Engine Works, Brantford, Can.

Beater Rolls
Bentley & Jackson, Bury, Eng.
DeCew, J. A., Canadian Express Bldg., Montreal, Can.
Marx, J. & Co., London, E.C., England.
Tippet Arthur P. & Co., Montreal, Can.

Belting
Dominion Belting Co., Hamilton, Can.
Reddaway, F. & Co., Montreal, Can.
Sadler & Haworth, Montreal, Can.

Bleaching Powders
Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Winn & Holland, Montreal, Can.
Klipstein, A. & Co., Ltd., Montreal, Can.

Boilers
Jenckes Machine Co., Sherbrooke, Can.
McDougall, J., Caledonian Iron Works, Montreal, Can.

Brass Wire Cloth, Fourdrinier Wires
Christie, Geo., Ltd., Glasgow, Scotland.
Finckh, Hermann, Reutlingen, Germany.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier St., Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Camel Hair Belting
Reddaway, F. & Co., Montreal, Can.

Calendar Rolls
Dillon Machine Co., Lawrence, Mass.
Farrell Foundry & Mach. Co., Ansonia, Conn.
Holyoke Machine Co., Holyoke, Mass.

Chemicals, Colors, Etc.
Brunner, Mond & Co., Montreal, Can.
Gewerkschaft Sachtleben, Homberg, Niederrheim, Germany.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter St., Montreal, Can.
Meincke. C. A. & Co., Coristine Bldg., Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Holyoke Machine Co., Holyoke, Mass.
Valley Iron Works, Appleton, Wis.

Cutters
West End Engine Works, Edinburgh, Scotland.
Dillon Machine Co., Lawrence, Mass.
Chambers & Simpson, Toronto.

Conveying Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Garland, M., Co., Bay City, Mich.
Jeffrey Mfg. Co., Montreal, Can.

Digester Lining
Can. Boving Co., Toronto.
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.
Swenson Evaporator Co., Chicago, Ill.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Evaporators
Scott, Ernest & Co., Fall River, Mass.
Swenson Evaporator Co., Chicago, Ill.
Zaremba Co., Buffalo, N.Y.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Hamelin & Ayers Co., Lachute Mills, Can.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

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Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

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Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

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Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Holyoke Machine Co., Holyoke, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

Lamps
Fornstedt, Gustaf, Three Rivers, Can.

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Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
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Heinbach, Thos. Jos., Ltd., Duren, Germany.
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Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

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Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

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Appleton Machine Co. Appleton, Wis.
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
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Canadian Boving Co., 164 Bay St., Toronto, Can.
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Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
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Fischer, Julius, Nordhausen, H., Germany.
Glens Falls Machine Works, Glens Falls, N.Y.
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Horne, J. H. & Sons Co., Lawrence, Mass.
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Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
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Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Storrer, H. F., New York, N.Y.
Swenson Evaporator Co., Chicago, Ill.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel, Chr., Reutlingen, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

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Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

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Allis-Chalmers-Bullock, Ltd., Montreal, Can.
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Canada Foundry Co., Ltd., Toronto.
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Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
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Schaeffer & Budenberg, Brooklyn, N.Y.

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Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.

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Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

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Waterous Engine Works Co., Ltd., Brantford, Can.

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Mardon, Alfred H., London, E., England.

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Can. Boving Co., Toronto.
Union Screen Plate Co., Fitchburg, Mass.

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Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., Wurtemberg, Germany.
Wandel, Chr., Reutlingen, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

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Ryther & Pringle Co., Carthage, N.Y.

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Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

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Union Sulphur Co., 17 Battery Place, New York, N.Y.

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Schaeffer & Budenberg, Brooklyn, N.Y.

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Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Cranes
Holyoke Machine Co., Holyoke, Mass.
Garland, M., Co., Bay City, Mich.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Hugh R. Blethen, 21 Park Row, New York, N.Y.
Northern Crane Co., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.

Turbines
Jenckes Machine Co., Ltd., Sherbroke, Can.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Voith, J. M., Wurtemberg, Germany.
Smith, S. Morgan, Co., York, Pa.
Smith, S. Morgan Co., York, Pa.

Water Wheels
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Can. Boving Co., Toronto.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

MILL SUPPLIES CONTINUED

McDougall, John, Caledonian Iron Works, Montreal, Can.
Hamilton, Wm. Co., Peterboro, Can.
Holyoke Machine Co., Holyoke, Mass.

Wire Cloth for Paper Machines
Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Finckh, Hermann, Reutlingen, Germany.
Kufferath, Andreas, Mariaweller, Germany.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste
Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Wet Machines
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C. & Co., Ltd., Craig St., Montreal, Que.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Rooth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

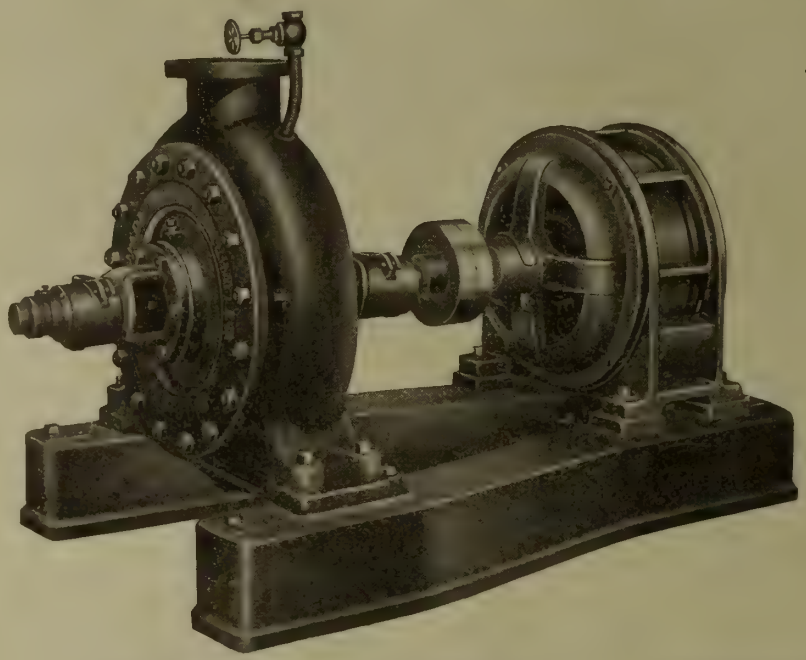
Bag—
Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, J. C. & Co., Ltd., Montreal, Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—
McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—
Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—
Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

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Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson & Co., Ltd., J. C., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Richard & Co., Petit Pre, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson & Co., J. C., Montreal, Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C. & Co., Ltd., 700 Craig St, Montreal, Que.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Booth, J. R., Ottawa, Ont.
Ford, J. & Co., Port Neuf, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag—
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull. Que.
Wilson, J. C. & Co., 242 Craig W., Montreal, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Tissue and Toilet—
Eddy Co. The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. & Co., 242 Craig W., Montreal, Que.

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Booth, J. R., Ottawa.
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Eddy Co., The E. B., Ltd., Hull, Que.
Gore Paper Mills, Dundas, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont
St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Wrapping—

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Scotch Fibre", "Invictus Fibre", Hercules Manilla", St. Francis Manilla", "Wave Crest Drug."
Crabtree & Sons, Edwin, Crabtree Mills, Que.
Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont .
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Montreal Paper Co., St. Bazile, Que.
News Pulp & Paper Co., Ltd., Montreal, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Strathcona Paper Co., Strathcona, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

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Calgary, Alta.
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Tees & Persee.

Vancouver, B.C.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.

Victoria, B.C.
Mitchell Bros., 8 Bastion.

Winnipeg, Man.
Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Douglas & Ratcliffe.
Hudson Paper Co.
Kilgour Bros.
Martin, John, Paper Co., Ltd., 319 William.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persee.

St. John, N.B.
Schofield Paper Co., Ltd., 26-30 Prince William.

Moncton, N.B.
Reid, F. P. & Co.

Halifax, N.S.
Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.

New Glasgow, N.S.
McGregor, R. & Co.

Kingston, Ont.
Hendry, J. A., 75 Princess.

Hamilton, Ont.
Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

Ottawa, Ont.
Barnard, W. R., 228 Albert.

Toronto, Ont.
Buntin, Reid Co., 13 Colborne.
Douglas & Ratcliff, Ltd., 36 West Market.
Fisher, E. W., 215 Victoria.
Gain, T. & Son, 124 Richmond W.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George
McNairn, J. H., 5 Jarvis.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

Montreal, Que.
Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
Lloyd, Ed., Ltd., Eastern Townships Bank Building.
McFarlane, Son &Hodgson, 14 St. Alexander.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Co., 138 McGill.

Quebec, Que.
Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.

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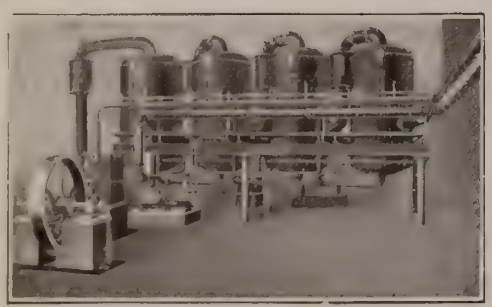
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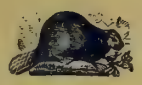
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Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

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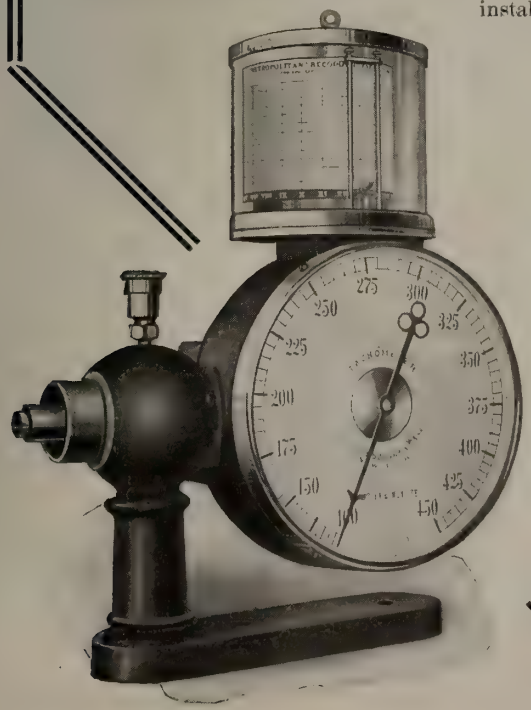
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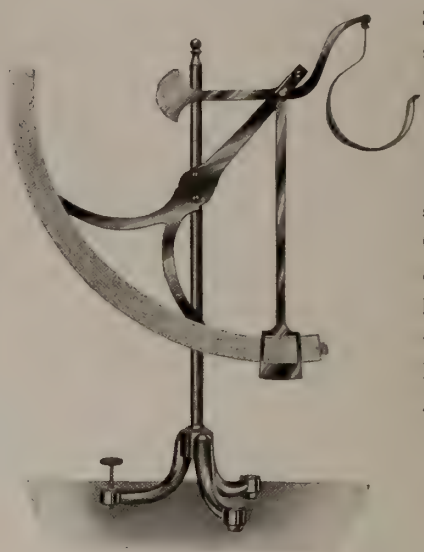
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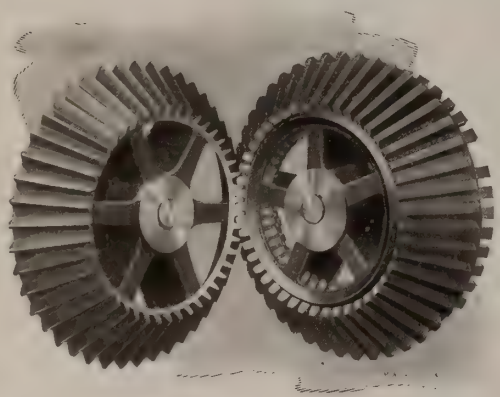
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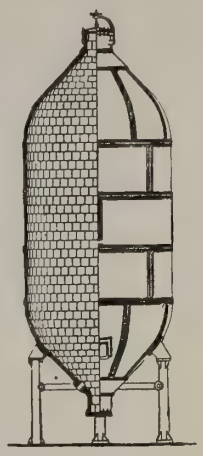
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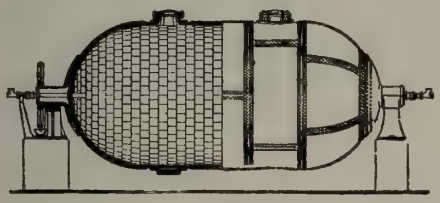
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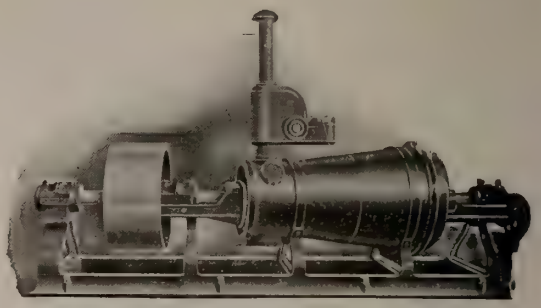
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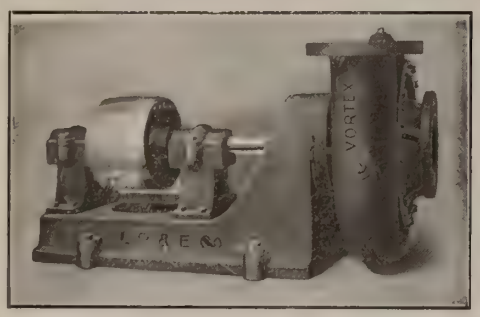
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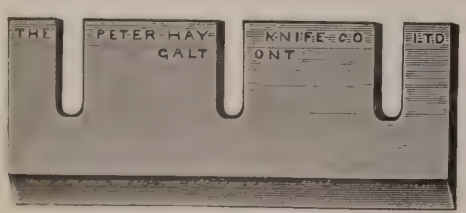
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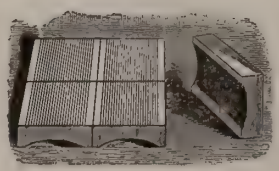
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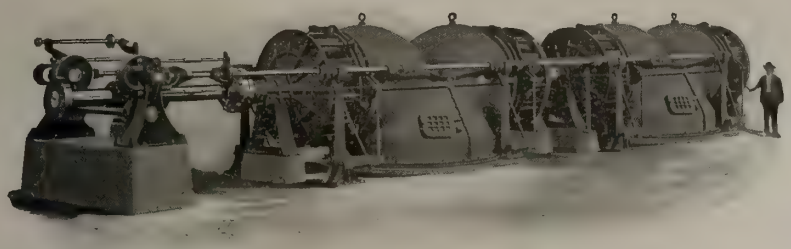
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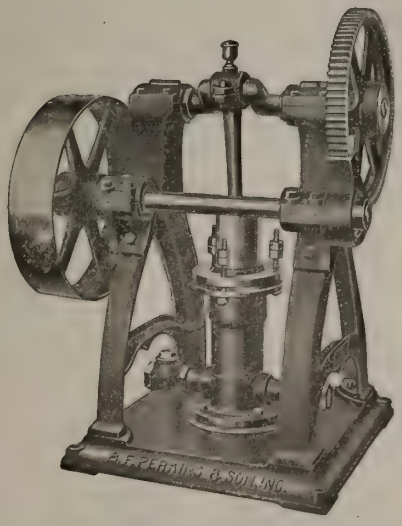
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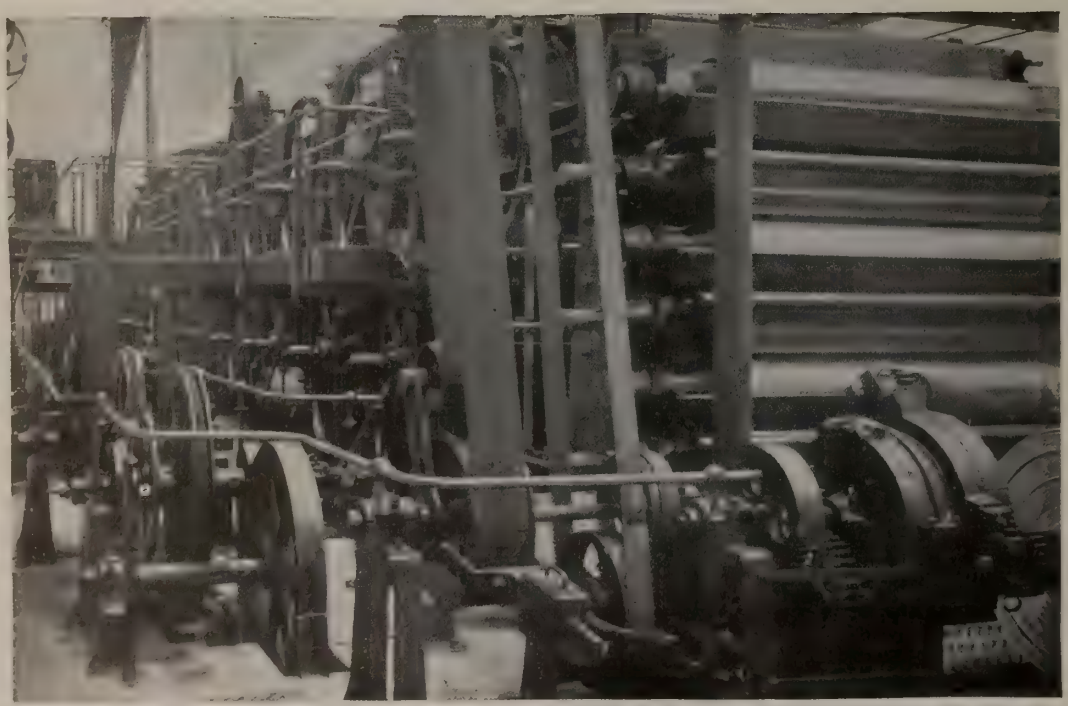
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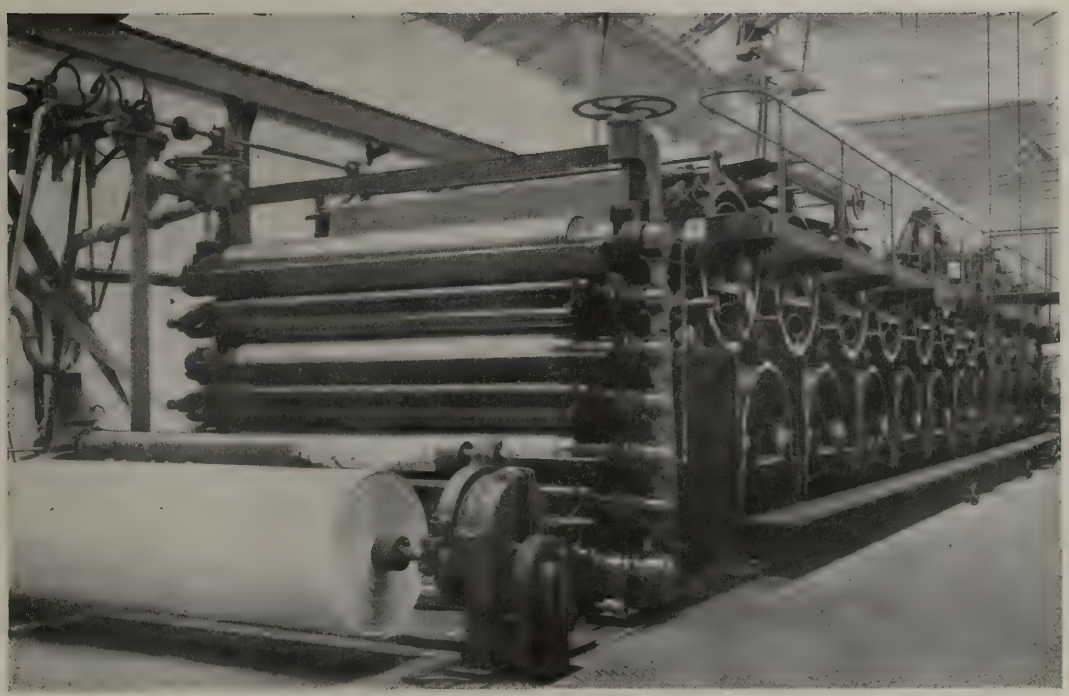
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View From Dry End of 134-inch Paper Making Machine at the Daily Telegraph Mill, Dartford

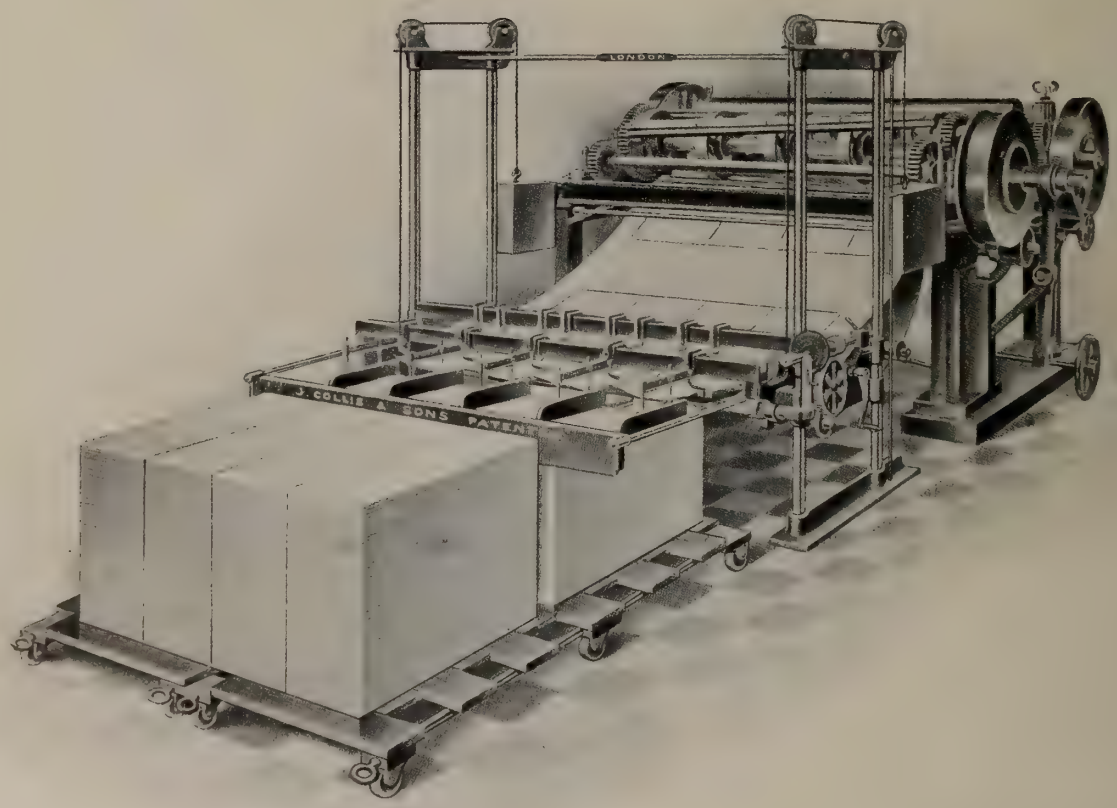
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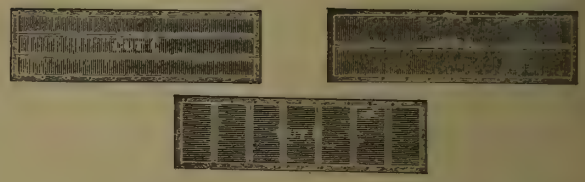
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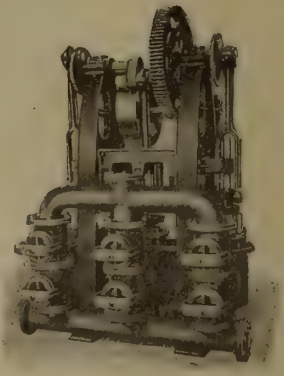
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VOL. XI. TORONTO, JANUARY 15, 1913 No. 2

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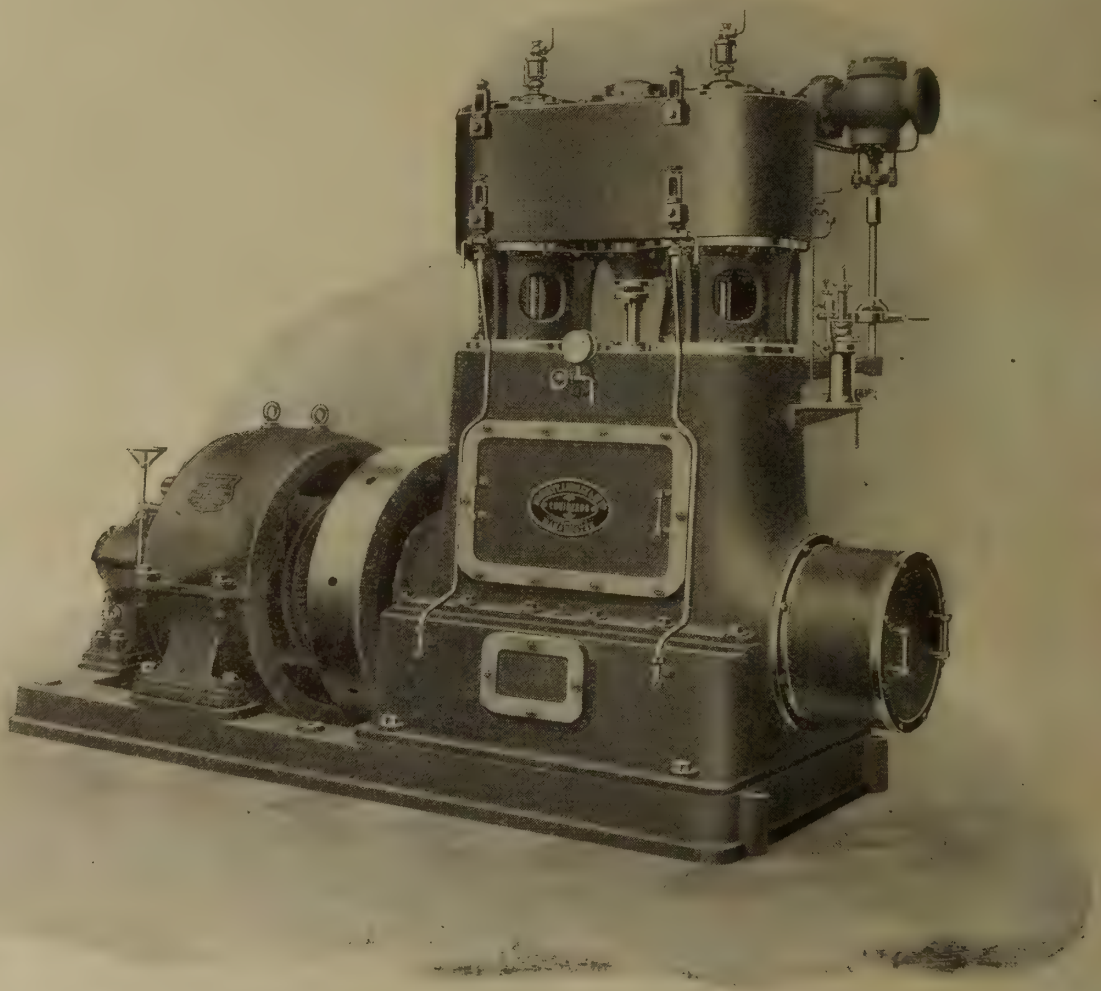
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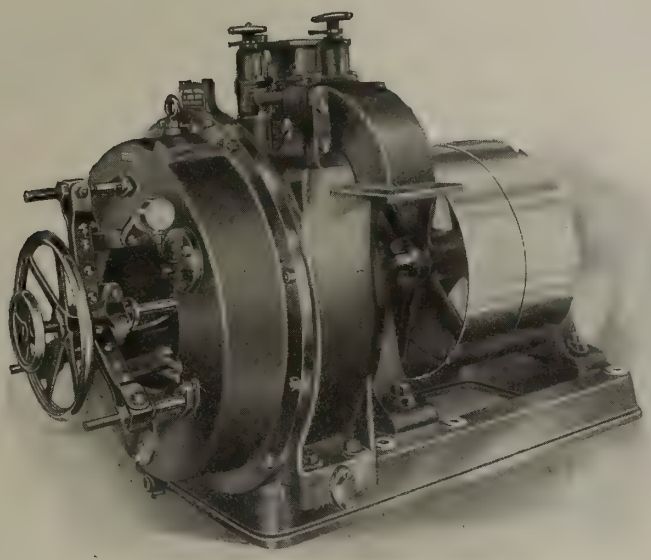
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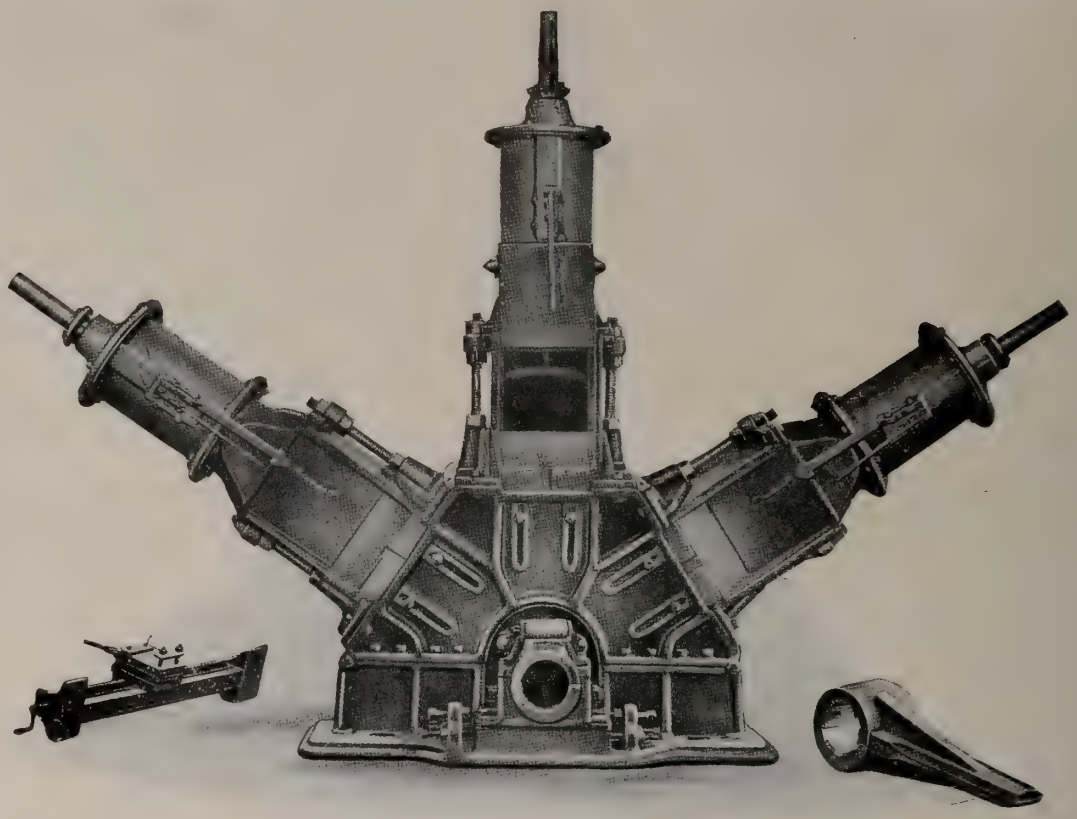
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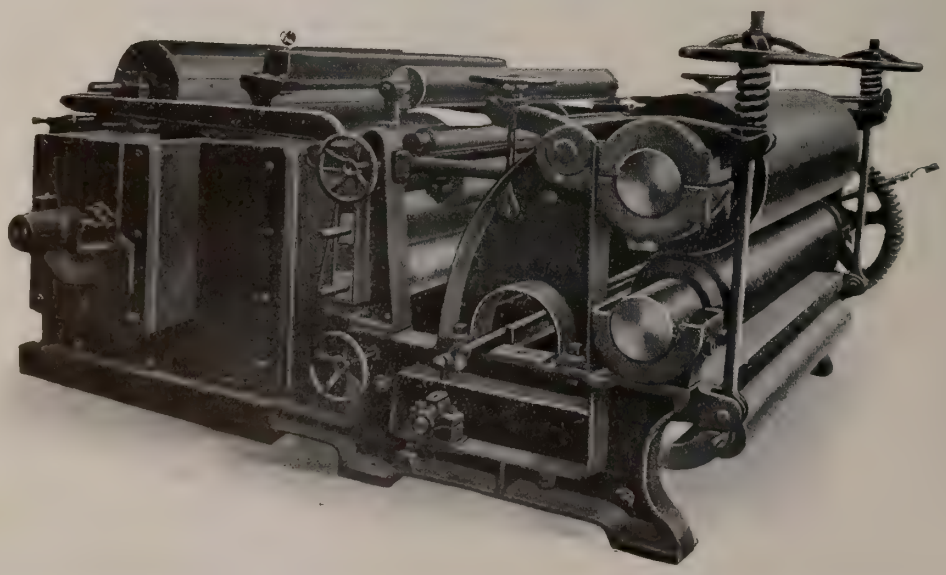
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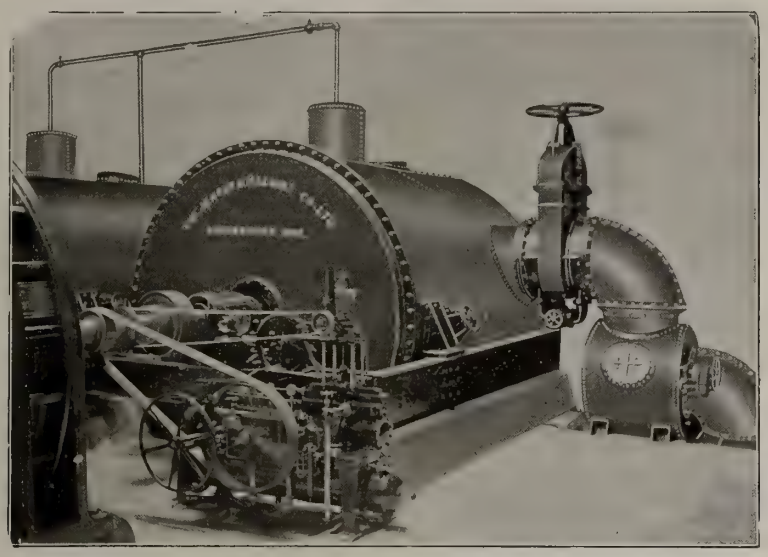
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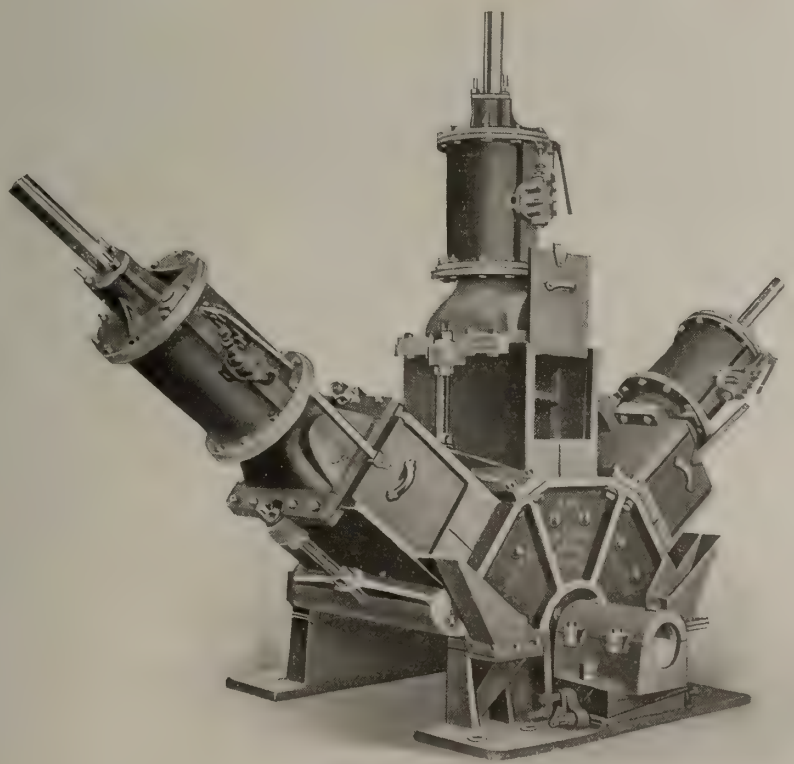
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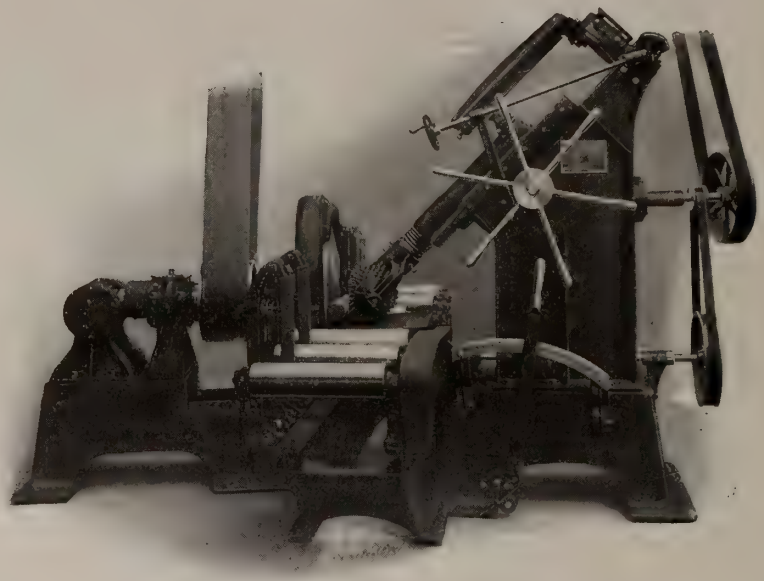
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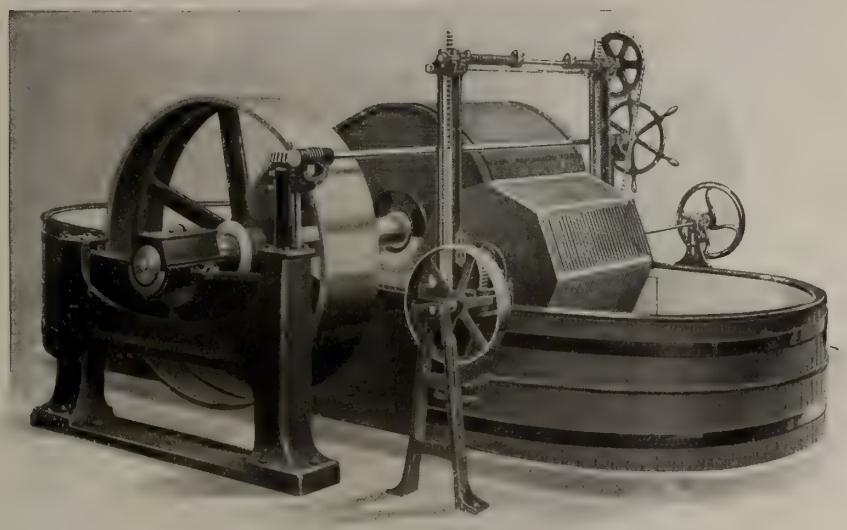
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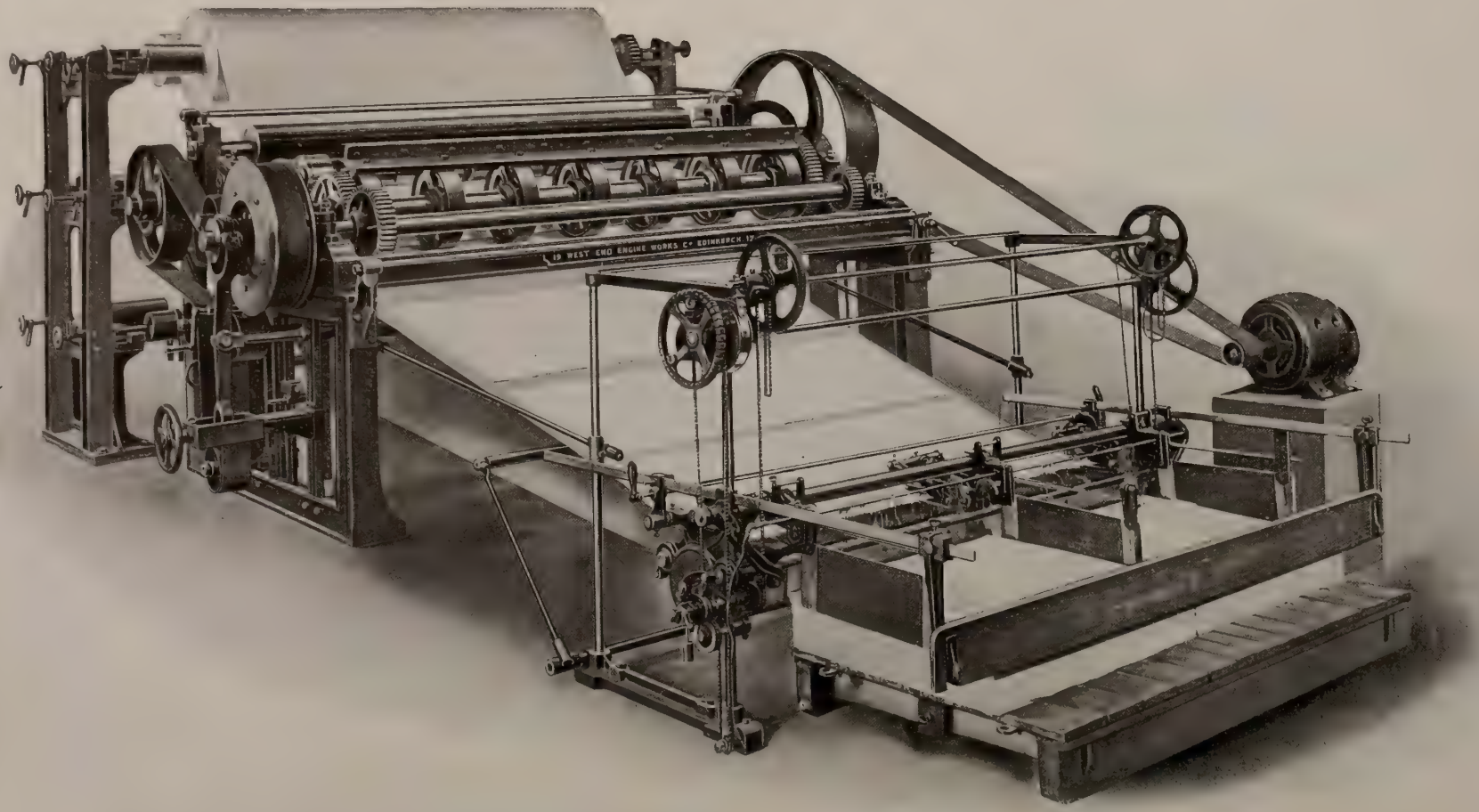
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Investigate its merits for yourself. Booklet No. 208.

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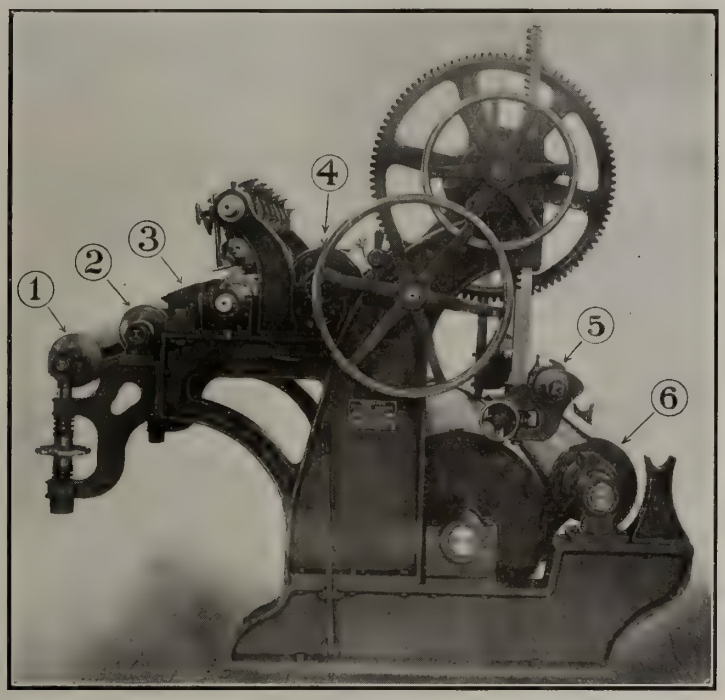
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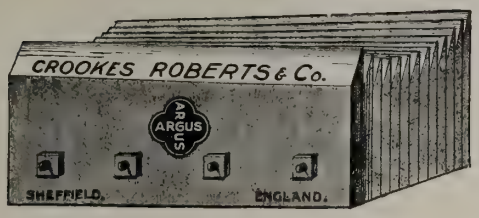
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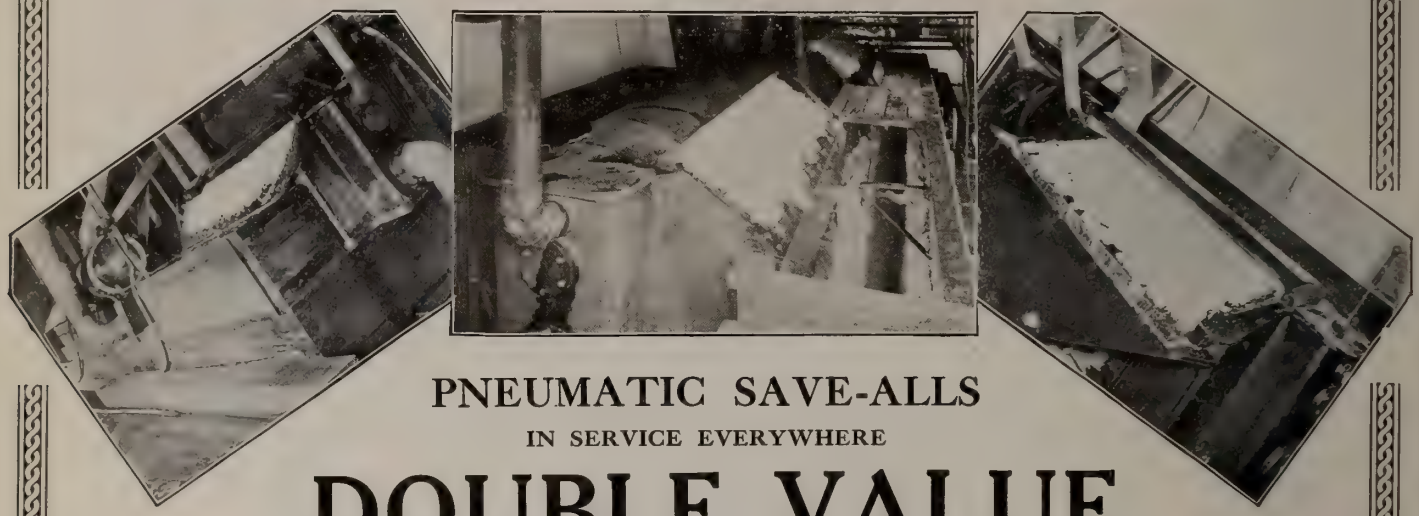
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The Standard Apparatus for Reclaiming Waste



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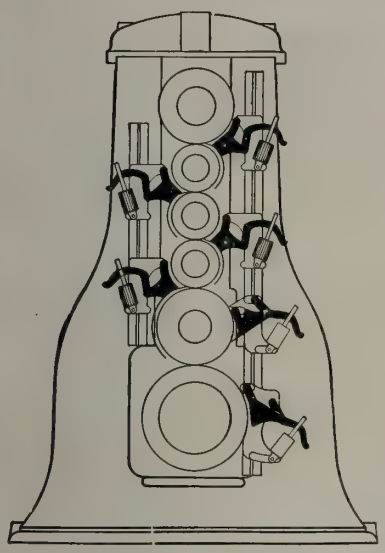
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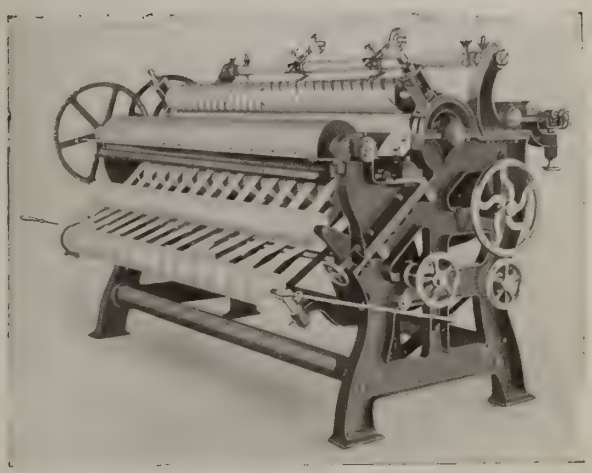
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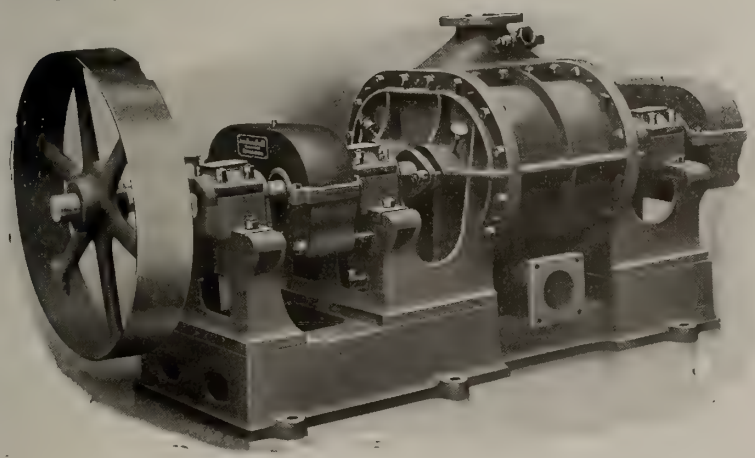
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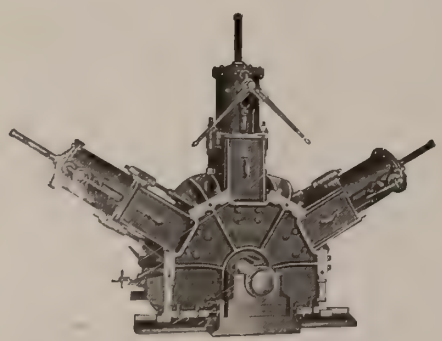
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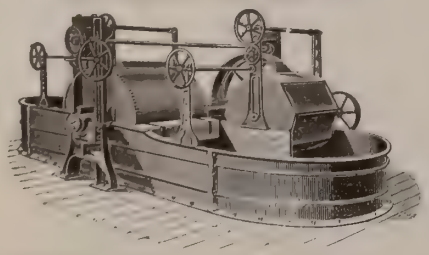
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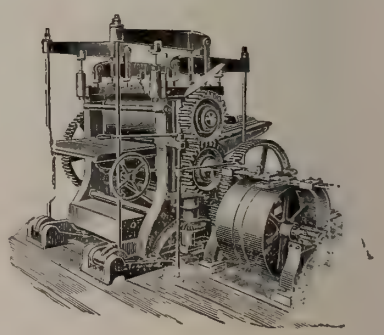
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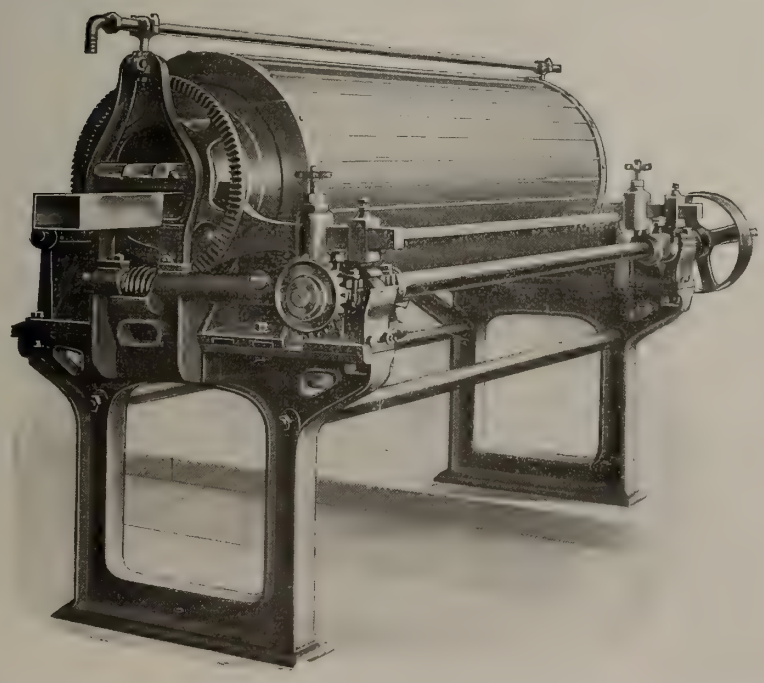
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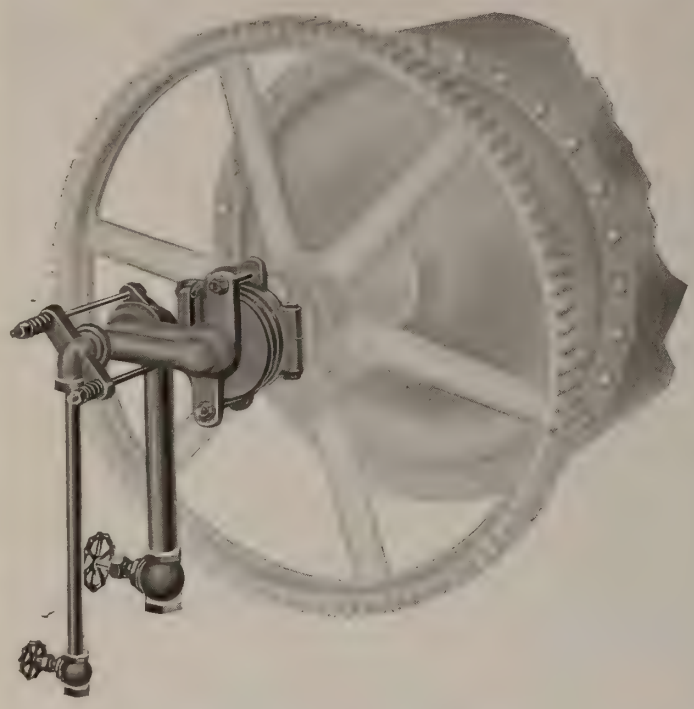
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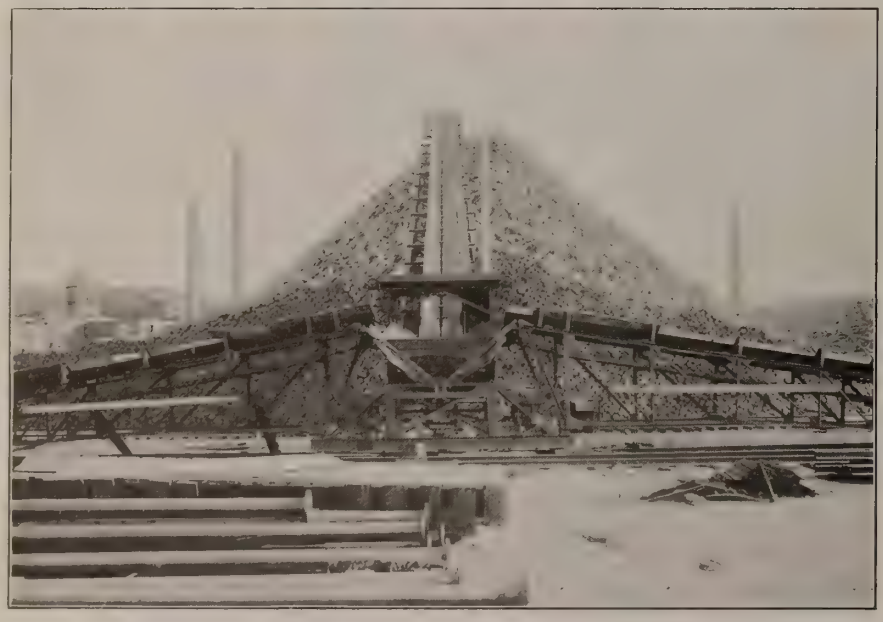
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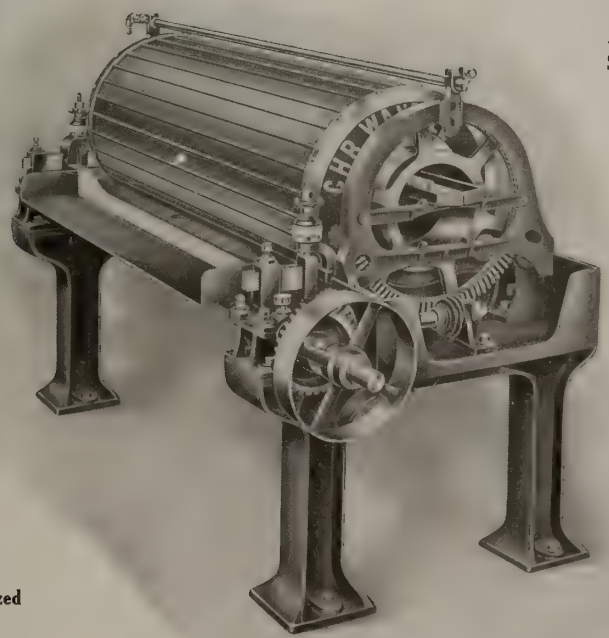
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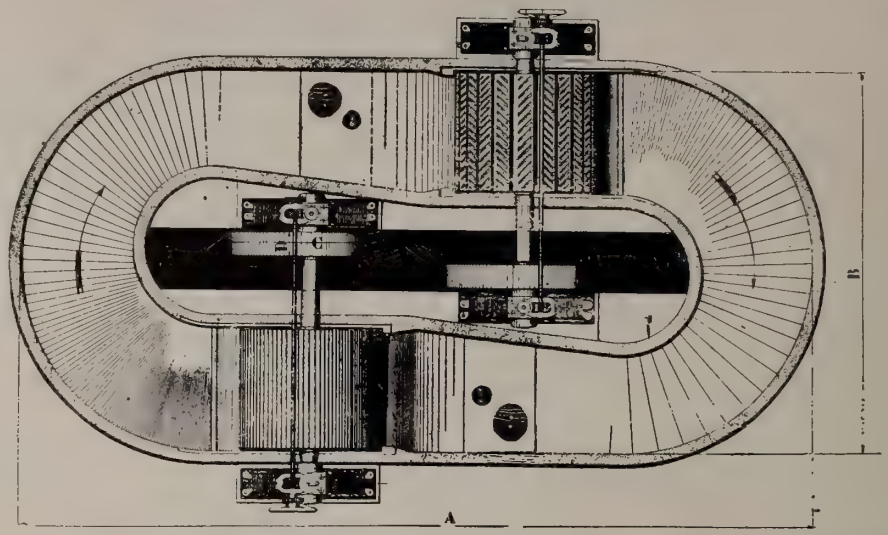
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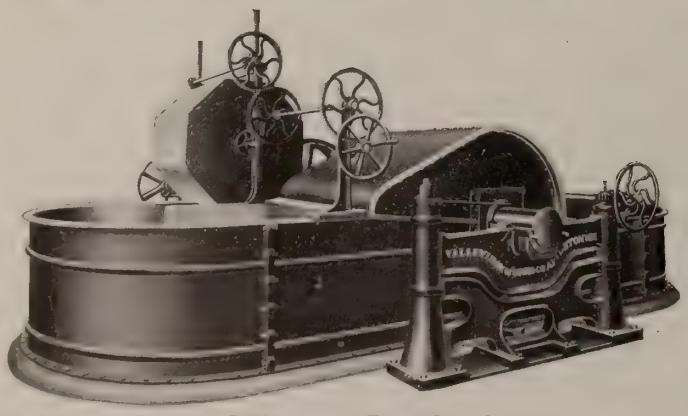
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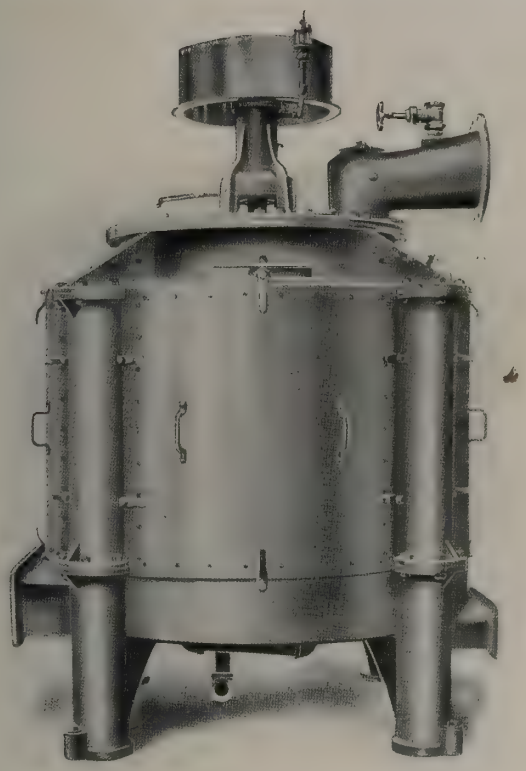
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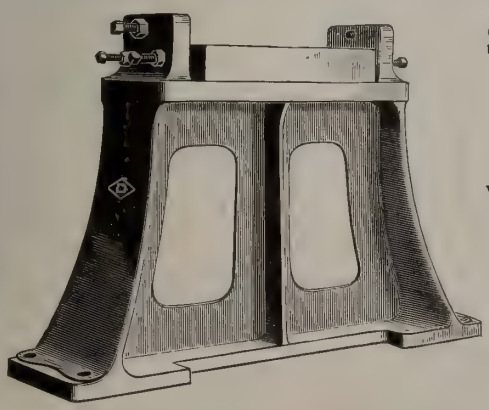
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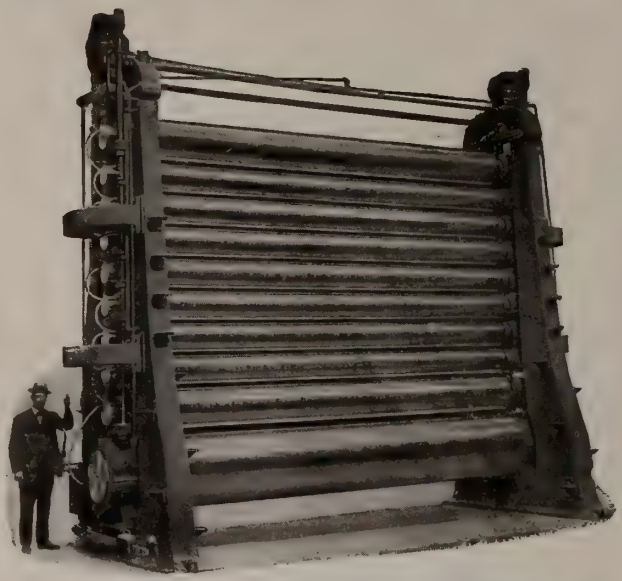
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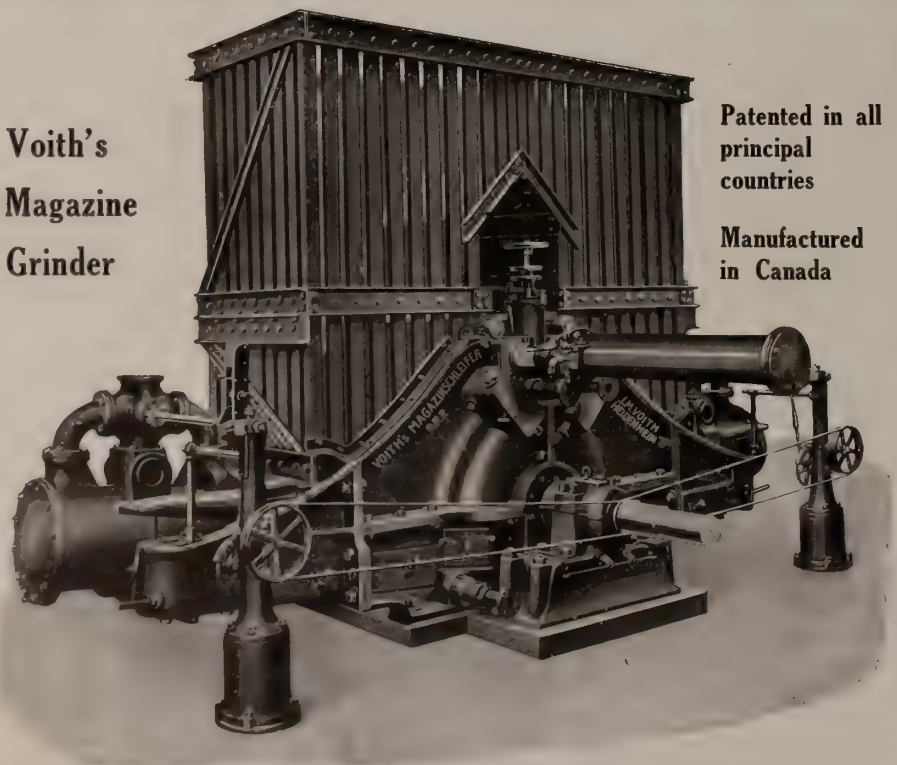
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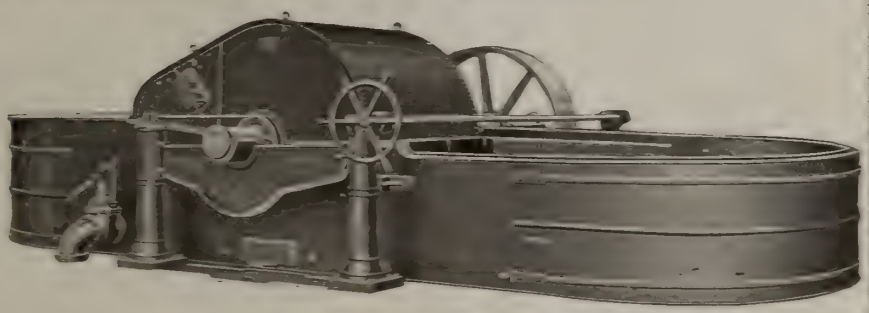
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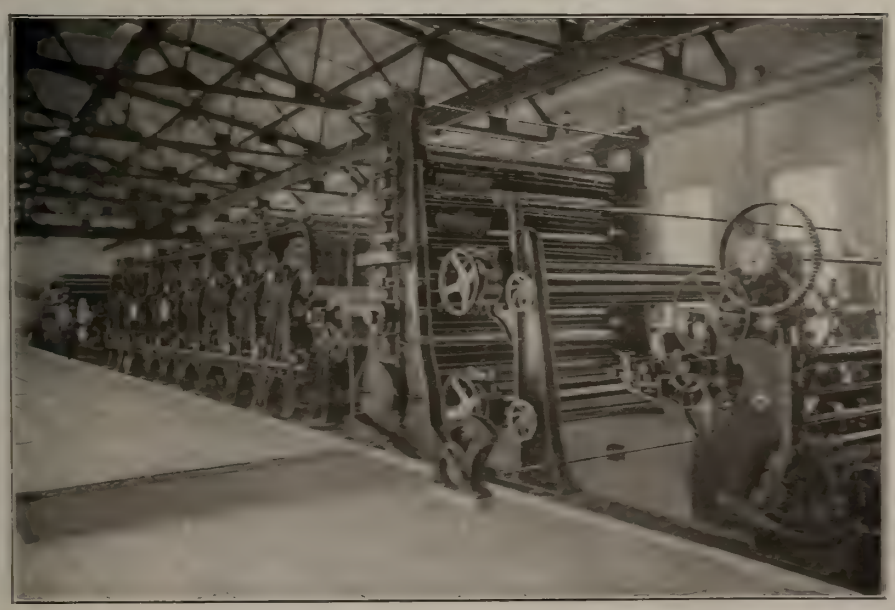
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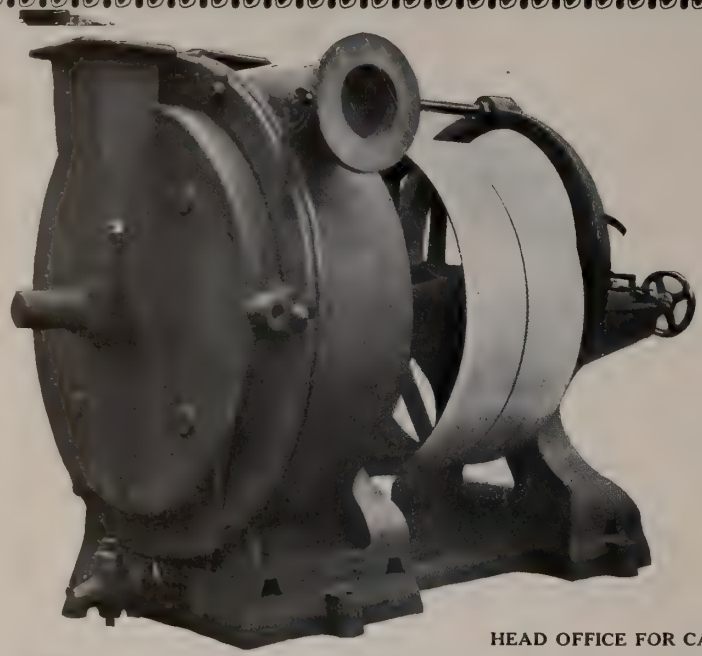
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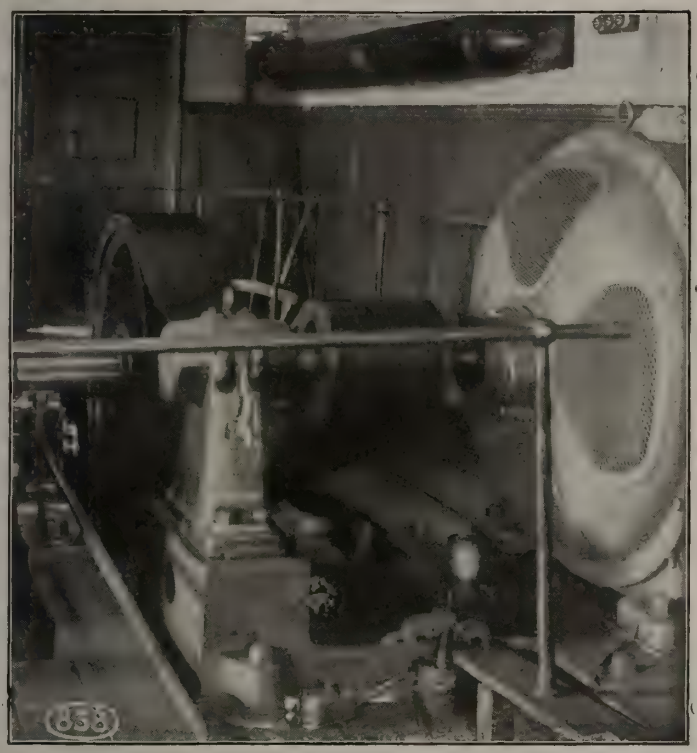
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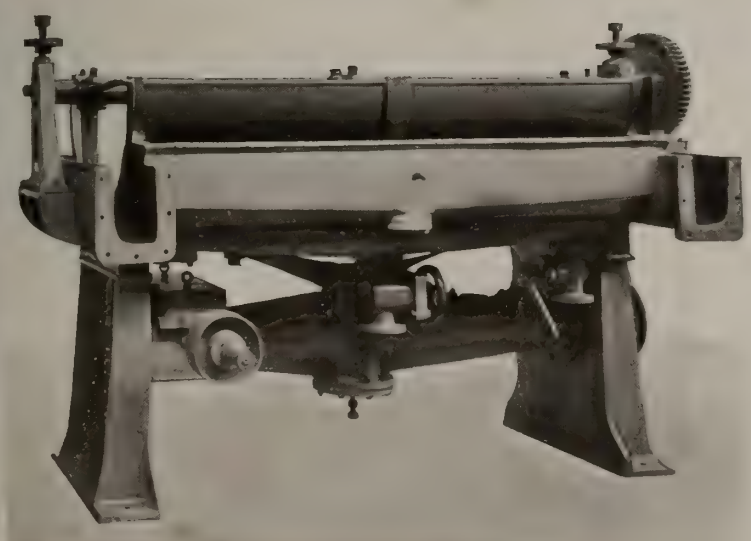
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VOL. XI. TORONTO, JANUARY 15, 1913 No. 2

FINANCIAL STATUS OF THE INDUSTRY

We have previously referred to a tendency in some quarters to disparage the present rapid development of the pulp and paper industry in Canada on the ground that the ultimate effects of a boom are harmful rather than good. The Montreal "Shareholders" uses the recently announced failure of the Eastern Canada Power & Pulp Company as the text upon which to preach a little sermon upon the evils of over-development.

There is a certain amount of truth in what our contemporary says, though we cannot agree, nor do we believe the majority of those well acquainted with this particular industry would agree, in the larger conclusions which might be drawn from its arguments. It is true that when the possibilities of an industry become generally recognized by the public on account of the striking success of old-established enterprises, there are generally to be found a class of promoters ready to take advantage of the investor's interest and foist upon him a number of new propositions, the chief merit of which consists in the ingenuity with which their financial arrangements are made to accrue to the profit of said promoters. And it is not surprising under such circumstances that ultimate manufacturing and commercial success occupies a secondary position in their minds compared with the facility with which shares and bonds can be unloaded on a more or less believing investing public. Such success as has been achieved by Canadian pulp and paper manufacturing companies has been won through good judgment in locating the mills in the right spot related to accessibility to power, raw materials and to good shipping and marketing facilities; to downright hard work and attention to detail in mill planning; and to continuous good and aggressive management throughout. The financial success which followed was built in the first instance and all the way through on the prime requirement of success in the manufacturing and commercial departments of the mill. Promoters of new enterprises are sanguine and are apt to forget this important truth; or rather, they are so taken up with the possibilities and the rewards of the organization end of the business, that they are blind to all else.

The organizers of the Eastern Canada Power & Pulp Company, including Sir Rodolphe Forget, M.P., who was also the organizer of several other financial organizations, evidently belong to the genus "promoter," whose chief interest lies in stock manipulation rather than in putting a manufacturing enterprise on a sound footing from an industrial point of view. We do not say they wilfully neglect this important part of the work, but rather that they understand little of the requirements of an enterprise other than launching its securities on the market. The result is, as such critics as the "Shareholder" declare, a black-eye to the pulp and paper industry in Canada.

To take the particular case named, the Eastern Canada Power & Pulp Company, we understand that a line of railway on which the management depended for shipping facilities, could not be financed, or at any rate that for some reason it was not built; also that the water supply was not such as had been calculated upon. All we can say is that if these things were depended

on for successful operation, good management would have seen that they would be actually forthcoming before asking investors for their money. True financial ability, as distinguished from stock-jobbing ingenuity, consists in just the difference indicated.

But, while we agree with the critics in their warning against this kind of happy-go-lucky proposition, and admit that there are one or two pulp and paper enterprises in the field to-day which may be placed under this category, we cannot see that the industry as a whole is in any but a flourishing condition, excepting inasmuch as the almost unprecedentedly high water in Canada and the Eastern States during the past year has slackened the demand for ground wood. The truth of this position is, we think, evidenced in the survey of the mills given in the editorial columns of our last issue. New mills there are, but the main proportion of the growth has been in the direction of gradual and conservative extensions imperatively demanded by a growing trade.

The fact that mill capacity is growing more rapidly than population need not create anxiety. It should be remembered that a large part of the increase is required to fill the vacuum created by a contrary condition in the United States where indeed, owing to fundamental inferiority to Canada in natural resources, new news print mills are comparatively scarce and indeed old ones are being converted to the manufacture of wrapping paper and other lines. To look upon the pulp and paper industry of Canada from a purely Canadian standpoint takes too narrow a view; its growth should be regarded more as a continental matter, from which point of view it is evident that the limits are still a long way off, always provided that the essentials before referred to are kept in clear view.

QUEBEC PULPWOOD SITUATION

The announcement that the Quebec Government, through an order-in-council, has removed the embargo on export of pulpwood from certain limits has created wide interest both in Canada and the United States. Opinions among the manufacturers, several of which will be found on other pages, are most diverse, but cannot be said to have crystallized yet. This is not to be wondered at, in view of the line of cleavage which exists between the various interests affected.

It will be remembered that in 1910 the Gouin Government, with a view to conserving the pulpwood resources of the province for the use of domestic manufacturers and encouraging the erection of mills by American capital, passed legislation restricting the export of wood out from Crown Lands. Most people were agreed that the objects in view were in a fair way towards being attained. In the year succeeding the passing of the restrictive legislation pulp, paper and lumber companies were incorporated in the province with a capitalization of no less than $41,000,000. New mills were started and old ones enlarged; and this state of things is still going on. To a considerable extent it indicated that the paper industry, or the news print branch of it, was gradually removing from the United States, where raw materials were becoming exhausted, to Canada, where they were almost inexhaustible and where water powers were in abundance.

So far, so good. But the conservationists stumbled against a snag in the shape of the clause in the United States reciprocity proposals which provided for the free admission into the American market of pulp and paper manufactured in Canada from wood produced on limits on which there was no restriction as to exportation but which placed a duty of $5.75 per ton on paper produced from areas on which any such embargo was placed. This, it will be remembered, was the only part of the Reciprocity bill which became operative.

Even this obstacle created no great handicap to Canadian manufacturers for a time, though whispers went around, it is true, as to the extraordinarily large proportion of paper which was being made from the product of freehold lands. Leaving such rumors out of account, however, there is no doubt that mills favorably situated in regard to freehold pulpwood limits purchased or used as much raw material from this source as was economically possible, so as to take advantage of the opportunity presented by the terms of the above-mentioned clause. This course of action was good so long as it was available. Recently, however, it became evident that the radius within which wood could be economically brought from surrounding freehold lands to the mills was becoming exhausted. Moreover, several American companies had been enterprising in the extensive purchase of tracts of lands in fee simple. The Canadian companies might possibly have attempted to solve the problem by buying their Crown land limits outright, or enough of them to satisfy the demand from the United States market. But this would have been expensive and would have met with opposition from those who made a strong point of conservation of forest resources.

The crux of the difficulty lay, not in the competition of American manufacturers, but in the difference of interest which was created in the ranks of Canadian paper-makers themselves. Those who owned freehold lands and were thus able to enjoy the advantage of free entry into the United States market, were quite content to allow matters to rest as they were. On the other hand, owners of mills which had to rely finally

upon the product of Crown lands, or were only partially able to obtain wood from privately owned lands and thus obtained free entry for a certain percentage of their paper, found themselves forced to meet the competition in that market of more favored mills in their own province. Naturally the situation was not a pleasant one.

Nor was it an easy situation for Premier Gouin. Without doubt, when he placed the embargo upon export of wood from Crown lands, he did it after careful consideration for the best interests of the province and the country at large, and in sympathy with what he believed to be the ideas of Canadian paper manufacturers themselves.

It is an example of how "best laid schemes o' mice and men gang aft agley" that inherent defects of any legislation, particularly it may perhaps be added of restrictive legislation, only show themselves after it has been put into effect. Quebec's attempt to encourage paper manufacture and to preserve natural resources looked well and for a time worked well; but there was a flaw which gradually brought about a cleavage. The fact has to be faced, and the remedy applied in a constructive manner. This is evidently the frame of mind in which Premier Gouin has faced a difficult situation. Partisan politics, such as the Montreal Star and the Toronto Globe attempt to drag into the controversy, have no rightful place. It is simply a question of the best method to pursue under the conditions which obtain, even though this may call for the reversal of a previous policy.

As we understand it, the order-in-council which has now been issued as an attempt to meet the new position of affairs grants the privileges of freehold lands to certain areas of Crown land limits owned by Price Bros., the Laurentide, Wayagamack, and Belgo-Canadian Paper Companies, sufficient to supply enough raw material for the quantity of paper required for export by those companies to the United States.

An element of doubt still exists as to whether this statement covers the entire policy or whether it is to be enlarged so as to cover the product of other lands as well. In its present shape it would appear to have been modeled on the action of the British Columbia Government in lifting its restriction on pulpwood export in so far as the Powell River Company are concerned. They are given the privileges of exporting wood, but it is thoroughly understood that it is only the product of the same which will be actually exported.

While we have no sympathy with the Bourbon-like attitude of standing by a policy or a conclusion once reached at any price, we confess to a feeling of disappointment that it has been thought necessary to abrogate regulations which appeared to have started working so well. More particularly is this the case in view of the recent Democratic victory in the United States which, it is quite conceivable, would sooner or later have led to a removal of the surtax on importations from restricted areas without any weakening in the Canadian attitude. However, it must be admitted that the same Democratic influence might lean in favor of free entry from other countries, at any rate those enjoying favored-nations treaties, which would counter-weigh Canada's advantage above named. It would be interesting to know just what effect Mr. John Norris' representations may have exercised in the outcome. The Dominion and the provinces should be quite able to manage their own politics without aid from outsiders.

As yet it is only presumed that the United States will allow paper made from the product of the exempted lands to enter free of duty. In spirit, it may be claimed, there is an element of evasion in the Quebec Government's action, and the United States Government may delay in removing the handicap. But seeing that this has already been done in the case of the British Columbia company mentioned, there is not likely to be serious difficulty on this head.

In the meantime, the attempt of the railroads to obtain authority for higher rates on pulpwood shipped from Eastern Quebec to American points, which has a close bearing on the problem involved, as explained in recent issues, will be watched with interest. A decision is not expected for some time.

WORKINGMEN'S COMPENSATION

The Ontario Commission, under Sir W. Meredith, which is looking into the question of the best basis for compensation of injured employees, is grudging no pains in arriving at the root of the difficult problems involved. Recently it heard Mr. P. T. Sherman, a New York expert, employed by the railways, who condemned the German system of compensation on the ground that it made the welfare of the people the playfield of impulsive experiment and entailed a radical change in political principles and in industrial customs. Asked whether direct liability would make employers more careful and whether all ultimate cost was placed on the consumer, Mr. Sherman maintained that the whole question was adjusted by competition, the employer with low operating costs being able to place the loss upon the consumer, while the one with high operating costs and keen competition could only escape by enterprise in accident protection.

A striking feature of the enquiry throughout has been Sir William Meredith's pertinacity in getting at

safeguards for the interest of the public as a whole, undeterred by legal technicalities and expert opinions. The evidence of an intelligent business man carries as much weight with him as that of the most highly trained expert or lawyer. The whole problem, as he sees it, is this: Can I propose an economically sound scheme which shall be equally just and equally acceptable to both employers and employed?

In connection with the enquiry, it is of interest to refer to the 1911 statistics on compensation in Great Britain under the British Workingmen's Compensation Act, 1906, and the Employers' Liability Act, 1880. The gross total of the persons employed in the seven groups of industries—according to the returns was 7,305,997. The annual charge per person employed works out for the different industries as follows: Shipping, 14s. 3d.; factories, 4s. 6d.; docks, £1 1s. 9d.; mines, £1 3s. 8d.; quarries, 10s. 9d.; constructional work, 13s. 5d.; railways, 7s. 11d. For all the industries taken together the charge per person employed was 8s. 5d., as compared with 7s. 8d. in 1910, and 6s. 10d. in 1909. The total charge for accident compensation on the seven industries was, however, considerably higher than the £3,056,404 shown by the returns. Apart from compensation paid under contracting-out schemes, outstanding cases under the earlier Compensation Acts, and damages recovered under the Employers' Liability Act, 1880, or at common law, the total must have been largely increased by charges for law costs, administration expenses, etc.

It is noteworthy that only a small proportion of the claims under the Act became the subject of litigation; also that the larger proportion of the cases settled in court were in favor of the workmen, these being 78 per cent. of the whole. Since the first-named Act came into full operation, the number of cases under the Employers' Liability Act has steadily diminished, and it looks as if this will eventually come into disuse. The amount of compensation granted in 1911 was £3,056,404, an increase of £356,079 over the year previous. This sum represented 4,021 deaths and 419,034 cases of disablement, the average payments being £154 and £5 16s. respectively.

It may not be generally understood in Ontario that in Quebec Province a Workmen's Compensation Act, superseding the common law, has been in force since January, 1910, as explained by Mr. Ross, K.C., in last issue. The Civil Code made employers responsible for damage caused by the carelessness or lack of skill of employees and injured workmen could always recover damages from their employers. The latter, however, could easily raise the question of "contributory negligence" or "inherent risk," and frequently defeated justice in this way. The recently enacted law adopted the main principles of the British Compensation Act, although it was modeled upon the French Workmen's Compensation Act which came into force on July 1, 1899.

WATER POWER RECOMMENDATIONS.

The Province of Quebec Running Waters Commission has just issued a valuable report on water powers. It presents the result of a searching investigation into the best method for bringing the various water powers of the province to good account for industrial purposes.

Quebec is particularly advantageously situated from the point of view of water power. Figures obtained by the Conservation Commission give the total available at 6,000,000 horse-power, but this estimate is believed to be too low. The report says that the main object should not be the mere conservation of these water powers but the best means and methods by which they may be turned to use.

Several recommendations for obtaining the best possible service from the streams and rivers are made by the Commission, the substance being: that the flow in all the rivers and streams with the exception of the St. Lawrence is irregular, varying with the seasons; that the long cold winters freeze the sources of water supply and hold back the flow; that the flow is lowest in the middle of winter; that there would be no suffering from this inconvenient fluctuation if a part of the flow could be held back and used later for the purpose of breaking up the ice.

There would seem to exist a natural remedy for this condition. All the rivers north of the St. Lawrence, and these are most important for industrial purposes, drain from lakes in the Laurentian Mountains. The lakes have high banks, and the outlet through which the river passes is narrow and steep, affording excellent conditions for the stretching of a dam. Work of a kind similar to that done on the upper Ottawa river where storage dams have been constructed below the lakes, is recommended as the best method for harnessing Quebec's great water powers. It should be noted the water courses of the Province of Quebec, with few exceptions, lend themselves well to works of regularization, assuring the stability and uniformity of the flow throughout the year.

NEW USES FOR WOOD BY-PRODUCTS.

It is interesting to note the many uses to which wood by-products are now put as a substitute for materials formerly in use. Wood, wool or fibre, for instance, is now in use for packing all kinds of goods. It is also used as a substitute for flocks in bedding, for upholstering, and also as a substitute for straw for stable purposes. Wood flour, which is made chiefly from spruce or pine sawdust, is now used as an ingredient in the making of linoleum and explosives. There is also a certain demand for wood rope made from wood fibre, which is used by engineers and iron founders and also by furniture and other packers. Supplies of these products are obtainable in England, and are imported from Norway, Sweden, Belgium and Germany. From inquiries made as to the prospect for Canadian manufactures, some doubt is expressed as to whether the cost of freight from Canada would not prove an obstacle to the trade. —J. M. Mussen, Canadian Trade Agent at Leeds, in report to Trade and Commerce Department.

JAPAN'S PAPER PLANTS

Specially Written for the Pulp and Paper Magazine, by Raleigh Raines

According to the Japanese writers, there are at least nine plants from which papers are made in Japan, each species furnishing a different variety of product. Two are species of the paper mulberry (Broussonetia), and while three species have been described and defined, they may all be referred to one, namely Broussonetia papyrifera, the paper mulberry. One, the white mulberry (Morus alba), another a species of Daphne mezereum, three are wild forms of a small tree (Wickstraemia), and one, the Edgworthia papyrifera, furnishes the pulp for the mitsumata paper of which we import



Mitsumata Plant, and sheet of paper made from its bark.—Japan

large quantities every year, especially for use as legal documents, diplomas, deeds, bonds, etc. For convenience, each plant will be described in the order named, although only three of these plants are usually known to the commercial trade in Japan papers. The Broussonetia papyrifera, or paper mulberry, is a native of China, Japan, Siam, Polynesian Islands, and Burma, and has been introduced into other countries. In Japan it is called Kodzu and Kozo, but in other countries a different name attaches in each locality. It grows wild in China and Japan and in the Pacific Islands, where the natives manufacture a large part of their clothing from its bark. It forms a small tree attaining a height of from twenty to thirty feet, with a trunk seldom more than a foot in diameter, and generally branches a short distance from the ground. The young branches are covered with short soft hairs; the leaves are deciduous, varying much in shape, those of young trees being divided into three and five pointed lobes. The Japanese cultivate this plant in very much the same way that we grow oziers. Only the young shoots are used for the manufacture of paper; these are cut into convenient size pieces and boiled until the bark separates readily from the wood when it is peeled off and dried for future use. In the wild state the plant or tree is usually found on the hills and mountains facing southeast so as to receive the full sunlight and protection from winds. The propagation is either done by planting divisions of old roots, layerings, cuttings, or seeds; but the most common method is the first mentioned. The young shoots with some rootlets are cut about a foot in length and planted in rows 2½ feet wide, at intervals of three inches apart in the drill. After attaining the height of several feet the plants are stripped of the bark, which is carried through the process of soaking in water, drying, rubbing, beating, and, finally, becomes the pulp from which the fine paper is made. The preparation of the pulp is quite an art, though simple in operation. The work of separating the outer bark from the fibre is accomplished only after much labor, which is usually performed by women and girls who receive from 6c. to 10c. per day. After the pulp is washed, rinsed, and mixed in vats a mucilage made from the arrowroot is added to give adhesiveness, then the pulp is spread upon frames to dry, in the end making a whitish brown paper, very strong, and in common use in Japan for wall papers, wrapping papers, and other uses. Instead of paper the natives of the South Sea Islands manufacture an exceedingly tough cloth called tapa, or kapa, which they commonly use for clothing, often dyeing same in many colors. By employing the mucilage of the arrowroot the pieces of cloth are joined together, and Admiral Sir Everard Home states that the King of Tongataboo, in the Friendly Islands, had one piece of cloth made which was two miles long and 120 feet wide. Of all the paper and fibre plants of the countries mentioned the Kodzu, or paper mulberry, is regarded as most useful to mankind, furnishing as it does the clothing for millions of human beings.

The Morus Alba, or white mulberry, is a native of China and the north of India. Only small quantities of this bast is used for paper making in Japan, its manufacture being mostly confined to China, though it is sometimes mixed with the pulp of other bast. The tree which has been introduced into America grows forty to fifty feet in height and belongs to the mulberries which are cultivated for the fruit.

Daphne mezereum is a well-known thymelaceous genus of shrubs, the species of which are widely distributed, being found in the temperate and tropical parts of Europe, Asia, Australia, and America. It forms a dwarf bush with erect branches, and is remarkable for

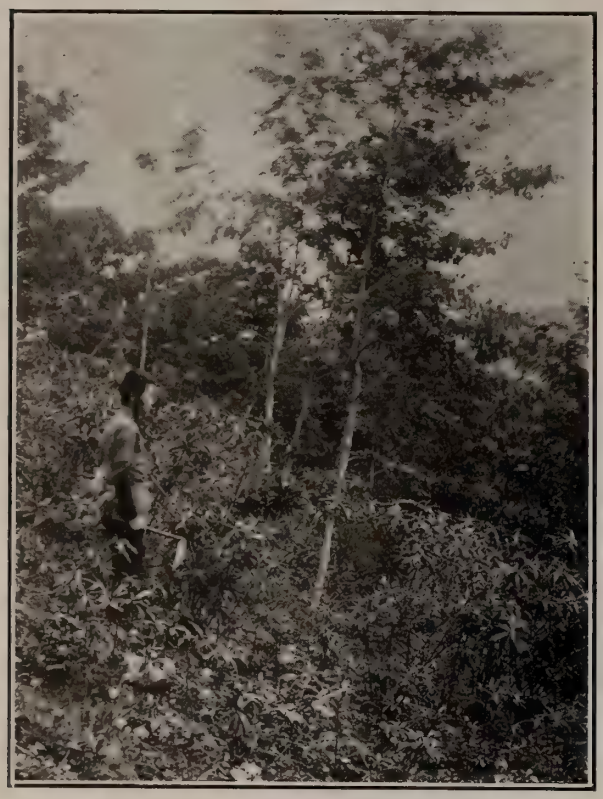


Boards covered with drying sheets of Mitsumata paper in Japanese village

the appearance of its fragrant pink flowers in early spring before the leaves expand. Several kinds of this species are cultivated in America. One of the species of this shrub D. cannabina, furnishes the famous Nepal paper much used in Japan and in India for records and

deeds, the fibre being very tough, will not break or crack when folded, and is extraordinarily durable. Very little of this paper finds its way to foreign markets, though comparatively cheap in its native country, the price for sheets a yard square being about fifty cents per hundred sheets wholesale.

The "gampi, or ganpi" belongs to the genus wikstroemia, of which there are about twenty species, three of them being used in Japan for making the fine money

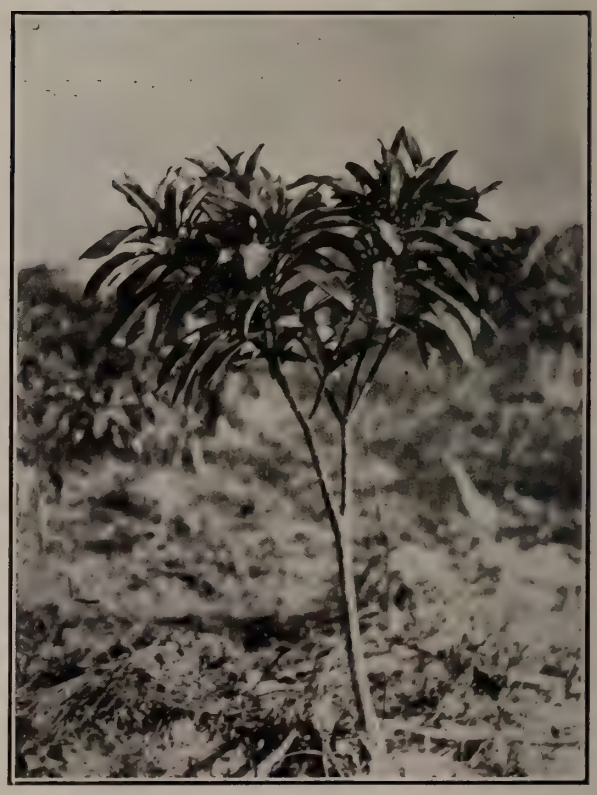


Mitsumata Plantation, near Giffo, Japan
Showing how the plants are cultivated on the hillsides

paper. This genus is distributed over the warmer parts of Asia, Australia, and the Pacific Islands, some of them being shrubs and others trees. This plant is rarely cultivated on account of the difficulty in propagation, and as a result the bark from which the fiber is made is gathered chiefly from the wild growth. While attempts have been made to grow the shrub, but little success has been the result, which renders the paper manufactured from it scarce and high priced. The rocky hill sides and mountains furnishes the best locality for its growth, and the difficulty attending its handling renders it unsatisfactory for harvesting. Very little of pure gampi paper is used for export owing to its scarcity.

The 'mitsumata" (Edgworthia papyrifera) is perhaps the most widely used of all Japan papers mentioned and is the chief paper of export. It belongs to the genus thymelacea and two of the species are used in the manufacture of the "mitsumata" paper of commerce. Its botanical name was given in honor of Mr. Edgworth, a noted botanist of India, who first described its commercial possibilities. This plant or shrub is extensively cultivated in Japan for paper making, and its introduction into the United States by the Department of Agriculture has shown that it can be as successfully cultivated in this country as in Japan. It thrives best on loamy shady hill sides, in warm or temperate climates. The accompanying illustration shows two shrubs in thriving health growing in North Carolina and in California. The word mitsumata means three pronged, as its forks are always composed of three branches instead of two, as is common with other shrubs. It is a pretty decorative shrub with its characteristic branching stems, broad light green leaves, and delicate yellow flowers which are borne in heads. It is sometimes grown in Japan for its decorative flowers alone. Scarcely over five feet high, it has as a result of its peculiar branching habit a characteristic vase form. The light brownish gray bark is thick and lacelike as a piece of tapa, and one can easily spread a bit of it out with the fingers into a web-like rough fabric.

Small fruits are borne in clusters, and each fruit contains inside the layer of flesh a shiny black, sharp-pointed seed with a thin shell and milk white contents. In the Provinces of Shizuoka, Nogano, and Fattori are quite extensive plantations of mitsumata, and the areas under cultivation are rapidly increasing. As a rule the plantations occupy land which is not fit for rice-growing, such as hill sides too steep for terracing and valleys too narrow to make rice culture practicable. The harvesting is done any time in the winter and consists merely in cutting the plants to the ground, binding them into bundles and transporting them to the farmhouse. From 600 to 2,000 pounds of raw bark is produced to the acre, and when made into pulp is worth in Japan 16 cents per pound in gold, which is four times what the wood-pulp from America sells for in Yokohama. In Japan small paper factories are scattered all over the central part of the country, along the



Mitsumata Plant growing near Wilmington, North Carolina

picturesque mountain streams, and the broad drying boards covered with sheets of fresh paper are common sights in many of the mountain villages. The Japan papers are in many respects the most remarkable in the world, and the papers employed by the common people

of that country are immeasurably more varied than with us. They form one of the important economies in the life of the peasant, and it is such ingenius uses of plant material as this employment of the bark of a shrub that makes it possible for 42,000,000 Japanese to live on the production of a cultivated area about one-third the size of the State of Illinois. The walls of Japanese houses are wooden frames covered with thin paper, which keeps out the wind but lets in the light, and when one compares these paper-walled "doll houses" with the gloomy bamboo cabins of the Island of Java, or the small windowed huts of our forefathers, he realizes that, without glass and in a rainy climate, these ingenious people have solved in a remarkable way the problem of lighting their dwellings and at least, in a measure, of keeping out the cold. Their oiled papers are another important element in the peasant life of the Japanese, and are astonishingly cheap and durable.

As cover for his load of tea when a rainstorm overtakes him, the Japanese farmer spreads over it a tough, pliable cover of oiled paper, which is almost as impervious as tarpaulin and as light as gossamer. He has doubtless carried this cover for years, neatly packed away in his cart. The coolies in the large cities wear rain mantles of this oiled paper, which cost less than 18 cents and last for a year or more with constant use. An oiled tissue paper, which is as tough as writing paper, can be had at the stationers for wrapping up delicate articles. Every farm house has its stock of wrapping paper, which has been in use for several years and appears as strong as ever. It has been tanned with the fermented juice of green persimmons and made into "shibugami," which is more impervious to moisture than ordinary paper and much tougher. In the tea factories the piles of paper sacks filled with tea are made of shibugami, and eight-year-old sacks covered with paper patches are a common sight. It is said that these tanned sacks keep the tea in better condition than any other sort, and that they last with careful use for many years. Grain and meal sacks are always made of this same paper in Japan, for it is not easily penetrated by weevils and other insects. But perhaps the most remarkable of all the papers which find a common use in the Japanese household are the leather papers of which tobacco pouches and pipe cases are made. They are almost as tough as French kid, so translucent that one can see through them and as pliable and soft as calfskin. To the fact that the Japan papers are made from bark they owe their peculiar character. They are as a rule softer, silkier, tougher, and lighter than our papers. Whether or not the methods employed in their manufacture are responsible for the yellow



Mitsumata Plant blooming in the U. S. Experimental Gardens, Chico, California

tinge which they always have is a question for investigation. It is probable that the Japanese acquired the art of paper making from the Chinese through Korea. The Chinese have made paper from the plants described herein for centuries, and there are in the Imperial Art Museums in Japan Chinese paintings on paper which date back as far as the seventh and eighth centuries. That there are possibilities in the cultivation of the mitsumata plant in the United States is evidenced by the success with which the plant has been grown in the Southern States, and in California.

THE PAPER MILL AND THE CHEMIST

By Judson A. DeCew, Chem. Eng.

There has been more or less written from time to time regarding the function of the chemist in the paper mill, and various points of view have been presented, chiefly those of the chemist.

Naturally it is to be expected that the chemist who has been able to accomplish something for his employers will be willing to present occasionally some analytical data, from which by proper interpretation, economies or improvements have been effected.

One hears expressed at meetings of manufacturers' organizations a desire on the part of managers for more technically trained men to take charge of their factory operations. During the present industrial growth and especially in the paper trade, there is an unusual demand for men with engineering and chemical knowledge, for which the universities can hardly provide.

Naturally under these conditions, the young graduate is soon placed in a position of responsibility, perhaps before he has obtained sufficient experience in the industry to make his technical knowledge really useful.

The best that the college can do for him is to instruct him in the general principles of the industry that he intends to follow, but in the transition period between the time of his entering the works and the point at which he will be competent to advise those men who have grown up in the business, a considerable amount of experience must be acquired in the application of his special knowledge.

In the introduction of the chemist into the paper mill, difficulties have sometimes arisen, which tend to retard the beneficial results that might be expected, and it is hoped that the presentation of some of the unfavorable conditions, may be of benefit to both employers and employed.

When a paper mill manager decides to establish a chemical department he may be influenced by either of two motives. Perhaps he desires to have a special

source of information regarding the technical features of his business, which he wishes to use privately as a means of strengthening his executive position. On the other hand, he may have the idea that the light of revelation thrown upon the business, by speaking and thinking of it in chemical terms, will immediately result in revolutionary discoveries, and bring results that will greatly enlarge his dividends.

Any such misconception of the true function of the chemist in the industry, and the method of applying his knowledge, will result in much misunderstood and ineffective work. In the first instance, the chemist is placed in the position of an expert reporter or inspector, who necessarily examines everything from a critical point of view. He will be constantly looking for trouble which he can trace to the ignorance or inefficiency of someone in the organization. Under such conditions he must always observe things from a distance, solve his problems entirely in the laboratory, and his isolated conclusions may be entirely at variance with mill experience.

In the text-books, chemical reactions are always complete, in analysis they are fairly so, and in mill work seldom. Moreover, as the process teaching of chemical authorities is generally out of date, the working theories of the immature chemist, scholastically acquired, are often despised by the mill superintendent. Let the chemical inspector once become discredited through impractical over-confidence, and his possible usefulness is forever gone. Again, when the young chemist comes to the industry with the idea that all of Nature's forces lie before him just awaiting his magic touch, he will soon learn from bitter experience that the greatest forces to be overcome in dealing with either matter or mind are those of inertia. In order to accomplish anything against these inert forces, requires constant effort, wisely directed and thoughtfully applied. So when the castles of discovery, founded upon simple but uncertain reactions, have vanished into an atmosphere of disappointment, then the young idealist may take a new grip and start along the stony path of real improvement.

There is a simple way, however, in which a man with average chemical and engineering training can be of great service in the paper industry. In every mill today there is a man who is making good paper from the material at his command, and who has never had the opportunity to acquire a special knowledge of chemical principles. He is anxious to understand the theory of his work and always willing to listen to reasonable and practical suggestions.

Let us assume that he has the co-operation of a man who is trained in chemical principles, and that while respecting each other's special experience, they unite their efforts with a common end in view. Then when a difficulty arrives in their work they solve the problem together and divide the credit obtained therefrom. As a result the superintendent becomes somewhat of a chemist, and the chemist becomes a practical scientist of recognized value, and if they outgrow their positions they will have no difficulty in finding better ones.

It is unfortunate that we do not often find such ideal conditions and any observer must be aware of the enormous waste in training and experience that is constantly taking place through lack of co-operation.

A valuable idea when isolated from its field of usefulness has very little value, and its originator must generally rely upon the helpfulness of others to give it an established existence. An early recognition of this fact should be worth as much to the man desiring technical progress as the technical ideas themselves.

FOREST CONDITIONS OF NOVA SCOTIA.

The Conservation Commission has done a public service in publishing, with the permission of the Nova Scotian Government, a book by Dr. B. E. Fernow giving the results of his recent investigation into the extent and conditions of the Forest Resources of Nova Scotia. The object of the reconnaisance, which was carried out with the thoroughness and scientific attention to detail for which Dr. Fernow is famous, was to substitute definite knowledge in place of general notions as to the conditions of timber supply and to accentuate the necessity for more conservative use, and for recuperative measures where necessary. It should be understood that quite two-thirds of the area of Nova Scotia comprises non-agricultural land covered with forest growth or unfit for other use, and this important asset, though it furnishes an annual revenue of four or five million dollars, is in danger of exhaustion within two decades unless preventative measures are adopted. Incidentally a vast quantity of valuable data are given respecting not only the actual forest conditions of the province but in regard to the distribution and reproduction of the forest in relation to soils and underlying rocks, reproduction on burned areas, etc.

MR. J. P. MORROW.

The National Paper Company, of Valleyfiield, Que., have just completed the installation of a third coating machine, and have closed a most prosperous year under the efficient management of the vice-president, Mr. Morrow.

He came to Canada over a year ago from East Pepprell, Mass., where he acted as general superintendent



MR. J. P. MORROW,
Vice-President National Paper Co.

for the Pepprell Card & Paper Company after twenty years' experience in the coating business.

Tees & Persee, with branches in all large western cities, have recently been appointed sales agents for that territory, and we foresee for this young company a promising future.

CALENDER DYEING

By Otto Schutz.

Nearly every boxboard mill has adopted the above method of dyeing, but before describing the same I wish to say a few words regarding the manufacture of boxboard.

Since the individual box packing of foods, especially cereal foods, has become a practice among the trade, the demand for boxboard has increased in the past four years to so great an extent—particularly in the United States—that the increased output from old established mills has not been sufficient, and the demand has caused the erection of many new mills for the exclusive manufacture of boxboard.

This kind of board is made on a two, three or more cylinder machine, and consists of the filler and the liner.

For the filler, which is the cheaper part of the board, a cheap grade of waste paper is selected as raw material; this material has to be transformed into pulp in the beater with the aid of steam. This pulp supplies one of the two cylinders on a two cylinder machine, or the inside cylinder on a three or more cylinder machine, and is generally used without any colors; only in exceptional cases, for instance, for the so-called jute board, colors are applied for tinting this stock in the beater.

For the liner, that is, the outside sheet of the board, as a rule a better material has to be chosen; this is essential, not only to secure a brighter shade but also a more uniform run. It is a well-known fact that waste paper does not come very uniform in color, and for this reason it is advantageous to use a more staple stock, such as a combination of ground wood and sulphite and a certain percentage of broke.

Mills which have not taken up this method of dyeing on the calender as yet apply the color in the beater for this stock, which supplies the other cylinder of a two cylinder machine, or the outside cylinders of a three or more cylinder machine.

Filler and liner are pressed together in a wet state and form the boxboard.

It is quite impossible even for the best machine tender and under the most favorable conditions to keep the weight of liner and filler through one order or run absolutely uniform and the same proportion; a fluctuation in the thickness of liner and filler may on account of the different value of these two stocks lead to a loss, sometimes not considered in the calculation, and such a loss will be the greater the more the cost of color per beater of filler stock. Furthermore, the thinner the liner, the more transparent it will appear, and the uncolored filler will consequently show through and affect the shade of the liner side—in many cases not to a great extent, but at least noticeable to a trained eye.

For calender dyeing filler and liner are applied in the same way as described before; the only difference is that the liner is not colored in the beater but on the calender stock by a water solution of aniline colors.

Aniline colors dissolved in water alone have not the covering power of a coating paste, consequently the brilliancy of the shade obtained on the calender depends also in this case upon the brightness of the stock and fluctuations caused by variations in the weight of the liner—or fluctuations caused by variations in the weight of the filler—will in this case cause also a fluctuation in the shade, but not to such an extent as in the case of beater dyeings.

Aniline colors applied on the calender show more brilliancy than when used in the beater; therefore, a somewhat duller liner stock dyed on the calender will produce a shade just as bright as a brighter liner stock dyed in the pulp.

The one great disadvantage possessed by calender dyeing is that the colors so applied are not waterproof, which means that if the board comes in contact with water, the water will dissolve the color again and it will "bleed." This can be overcome by applying waterproofing substances. Beater dyed board will not bleed, because each individual fibre has plenty of time to absorb the color and the addition of alum or some other mordant to the stock into the beater forms a new water-insoluble product—a kind of a lake on the fibre.

The costs of coloring the liner on the calender are much lower, and the writer found by practical trials that in some cases the cost of the color per ton of boxboard amounted only to $3 when calender dyeing was applied, whereas the color for beater dyeing for the same shade cost about $12 per ton of board.

Besides the saving of color, there is another great advantage the calender dyeing process offers.

Every paper-maker is well aware of the fact that changing shades involves loss of time and loss of stock; the cleaning of the beater, chests, felts and the machine has to be watched very carefully, especially after deep shades. Nothwithstanding all precautions, the return water from the previous color has accumulated in the reservoir and will often affect the new shade, unless the mill is equipped with a suitable arrangement to avoid this trouble.

Changes from one shade to another can be done on calendar dyeings with scarcely any interruption, provided the tanks and pipes are installed accordingly.

The accompanying sketch demonstrates an arrangement which allows a thick change in colors.

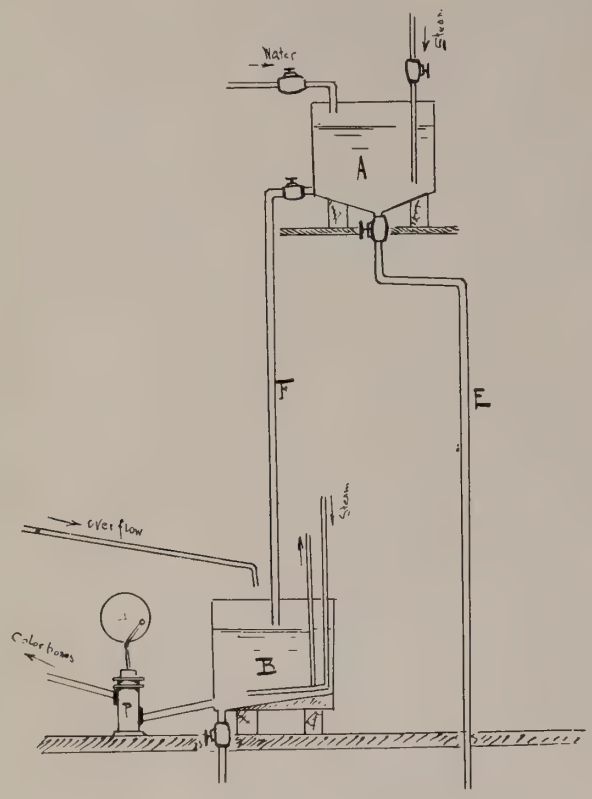
Tank A is the dissolving tank, with a water pipe and an open steam pipe. The bottom of this tank has to be arranged as shown in the sketch, in such a way that in case of changing colors the old color can be drawn out entirely through pipe E. From tank A the color solution flows through pipe F into the tank B, and from here the solution is drawn by the pump P into the color boxes. The overflow from the color boxes goes back into the tank B. A steam coil placed in tank B is essential if basic colors should be applied, because the solution of colors of this group has to be kept at a temperature of about 90 degrees F. for the following reason.

In order to obtain good results by calender dyeing, the colors have to be selected according to the requirements and to the conditions. Basic colors may be used for this purpose, but in order to avoid browsy and dawdy effects, streaks and great variations of the shade, the solution should be kept at a temperature of about 90 degrees F. Basic colors are cheaper to use than acid colors or direct colors, but they are rather sensitive to light.

For these reasons boxboard mills prefer to use on the calender acid colors and direct colors which can be used either alone or both in connection—certainly never in connection with basic colors—as the basic colors would precipitate as well with the acid colors as with direct colors, and this precipitation would plug up the pipe

in a very short time and the color solution would become altogether useless.

Acid colors and direct colors are more expensive to use, but the results are better in every respect, and some of these colors are of an exceptionally good fastness to light.



There are a few colors which can not be applied for beater dyeings at all, as they have absolutely no affinity for the fibre, even when used with alum or other mordants, but as a calender dyestuff they produce shades which in some cases resist the light during an exposure of weeks.

In cases where fairly good fastness at low cost is required, it is advisable to dye the pulp in the beater with basic colors about half the depth of the sample, and then to top it on the calender with acid colors or direct colors.

To-day, in many cases, silicate of soda is used in box factories for pasting the board, and as this chemical reacts as an alkali, colors have to be selected accordingly, because some of the same will decompose or change shade as soon as brought in contact with such chemicals.

For instance, for a sunproof yellow, pheno yellow may be applied, which gives a non-fading bright full shade. The only disadvantage this color has is its tendency to turn red as soon as brought in contact with an alkali.

Soluble blues or acid blues with an addition of acetic acid will give very bright blue shades of fairly good fastness to light, but they should not be selected for such board as is to be treated afterwards with silicate of soda or a paste of an alkali reaction, as the colors of this group do not resist alkali.

The colors are usually applied in very strong solutions, which cause a bronzy effect; this can be overcome by the addition of some soda ash in the solution of the direct colors; for acid colors, acetic acid will do the trick.

How and where to apply the color solution on the calender is a matter over which paper-makers do not always agree.

It is advisable to use besides the color boxes also water boxes on the calender at the same time, whereby a more even dyeing will be produced. These boxes are arranged on the calenders according to the number of the calender stacks.

In cases where there are three stacks, on the first one the water boxes are adjusted, the color boxes on the second one, and third one gives the board the finish.

By this arrangement the surface of the board is at first moistened uniformly all over before it comes in contact with the color solution, and the result is a uniform even shade. Moreover, two color boxes can be used, both with a weaker solution than one color box would require.

On machines with only two calender stacks it is advisable to adjust on the first calender stack one water and one color box. The water will also in this case open and prepare the surface before the same comes in contact with the color solution; the second calender stack will produce the finish.

Good formation and an even surface of the sheet are necessary in order to obtain an even, smooth dyeing, a hard sized material will not take up the color as well as a board with about 1 per cent. size and 1 per cent. alum, because a hard sized paper has so little absorbability that the color solution can not penetrate during the short moment of contact.

By comparing these foregoing observations, we are led to the conclusion that calender dyeing offers greater advantage than beater dyeing on boxboard and this explains the rapidity with which it is being introduced.

TECHNICAL NOTES FROM GERMAN MILLS.

Iron Spots.

Iron spots in paper, may result from various causes: from the equipment of the Hollander, from rust in pipe conduits, buttons, hooks and buckles in the rags, etc. It is advisable to equip every Hollander with a device that will show numerically any dropping of the rolls. Rag sorting should receive the most careful attention and the half stuff, liberally diluted, should be carried over sand traps. Magnetic rakes are only effective when from four to six are built into the sand trap of the machine, so that the stuff must circulate through them. In a fine paper mill, 5 rakes picked 20 grains of iron particles from ten pounds of stuff.

Alum as a Cause of Turbidity.

The sheet copper lining of the Hollander in a fine paper mill, was blamed for causing turbidity in the stuff when hard sized paper was being made, the stuff in parts of the Hollander not lined with copper showing less cloudiness. The sheet copper presented a bright, clean appearance. An excess of alum was regarded as the cause of the dirty, reddish color. In place of copper lining, a good coat of oil paint is recommended for iron Hollanders. For fine papers, the concrete Hollander that has been given a clean smooth cement coat or a tile lining is best. To be quite certain that the alum causes no rust formation, it is customary, in some mills, only to add it in the distributing box of the stuff vat.

HEAT AND POWER TRANSMISSION

By Leo Schlick, M.E. (Special for the Pulp and Paper Magazine.)

The following lines are devoted to the foundation of one of the most rapidly developing industries in the Dominion of Canada, namely, pulp and paper, and deal with, exclusively, the modern power transmission in direct transmission with heat transmission.

Guided by a foreseeing government, our Dominion has conditions, which can be called very sound. The pulp wood is cheap, cheaper than elsewhere, and this fact enables present mills to succeed.

Naturally this fact encourages the construction of new mills, and so we are standing before or better in the period of development of the Canadian paper industry.

Large mills will be built in the near future, owing to a greater output, which will naturally necessitate a decline in prices as competition grows greater.

To stand a lower market price without loss of profit the capacity of present mills has to be increased and expenses will have to be cut down, in improving the plant and in reclaiming waste heat and waste by-products.

Although it may take several years to create mentioned competition, it is always advisable to improve a plant in time, when the market is strong, of course without shutting down the mill or any part of it.

There are two different opinions to-day. The one is to run a mill with full capacity during good times and improve it during dull periods. The other and better one is to improve a plant as far as modern technic allows.

I shall be glad therefore if the readers of this journal derive any benefit from this article.

We will follow now the convertion of coal into heat, steam and power. Examples will prove how much can be saved and reclaimed. It is naturally not possible to give a complete treatise, as the space allotted for this article is limited.

Transportation of Coal.

Coal ought to arrive, if possible, in special railway cars, similar to the cut produced herewith in shape, allowing it to be emptied easily through openings in the bottom.



Following this, it should be dumped into a large funnel, to be connected with a conveying system, conveying the coal to a storage. Store as much coal as needed for use during from 3 to 4 weeks and be sure to have a reserve in case of miner strikes or railway accidents. Do not expose your coal to rain and snow, considering the fact that both absorb oxygen in passing through the air, as the so obtained additional oxygen will attack the coal, as tests have shown.

Convey continuously the coal to small chutes of your automatic stokers. Though it is sometimes advisable to construct bunkers above the boilers, it is impossible to store in them a quantity large enough to feed the furnaces for a longer period.

These bunkers have to be refilled and, therefore, it is preferable to convey directly and continuously in small chutes above the furnaces. This system is especially used in large steam plants.

Quality of Coal.

The trouble caused by some sorts of coal depends chiefly on its impurity, that is to say, one sort of coal contains better combustible matters than the same weight of another.

Certain qualities of coal require through practical experiments and experience determines quantities of air to attain right combustion. Therefore the proportions of a grate has to be dimensioned accordingly.

If it is desirable to test a coal of an unknown quality, mix it with your own in growing proportions and watch carefully grate, combustion, steam gauge and efficiency of evaporation.

If the coal burns satisfactorily, make a chemical test of it and ask your furnace people their opinion.

It is not always said that a good coal gives the cheapest steam, or vice versa.

Supposing your furnace had burnt 1,500 lbs. of coal an hour, and had evaporated 12,000 lbs. of water in the same time, i.e., had produced 12,000 lbs. of steam, the cipher of evaporation would be—

$$\frac{12000}{1500}=8.$$

If the price of the coal is, say, $3.00 a ton, then 1,000 lbs. of steam would cost—

$$\frac{\$3.00 \times 1500 \times 1000}{12000 \times 2000}=\$0.187.$$

In this way comparisons have to be made and the cheapest coal has to be found in relation to the price per 1,000 lbs. of steam.

Be careful in the choice of the size of the boiler furnace and note that the efficiency goes back, if more coal is burned in it, than it is constructed and calculated for.

Chiefly in the winter time and especially on Mondays a larger amount of steam is needed than usual. Therefore the size of the furnace ought to enclose a factor of safety. Control also the quality of the combustion regarding percentage of carbon dioxide (CO_2). Chemical tests show clearly as to whether the coal is converted into heat to its fullest extent, or if the bases receive too much or too little air.

For a practical check of the combustion, the following formula has given satisfactory results to control the combustion of hard coal. This formula has to be used when chemical tests of the coal are not on hand.

L = Loss of heat in % of all the calories contained in the coal.

Te = Maximum temperature of the gases, taken behind the boiler, in degrees C.

ta = Temperature of the air entering the furnace (about 20-25 degrees C.

$$L=\frac{Te-ta}{K}\times 0.65.$$

K = % of carbon dioxide in the flue gases.

The following example shows the use of this formula. For instance, the percentage of carbon dioxide is found

with an "Orsat" apparatus to be 8%: Te = 320°; ta = 25°; $L = \frac{320 - 25}{8} \times 0.65 = 24\%$. CO_2 has to be about 12% in a well served and constructed furnace.

With 12% CO_2, L would be $\frac{320 - 25}{12} \times 0.65 = 16\%$.

Difference between 24 and 16 equals 8%.

When the efficiency of the boiler is normally 72%, so will $\frac{8}{64} \times 100 = 12.5\%$ of your coal be wasted.

If a mill has a daily consumption of 50 tons of coal, $3.00 per ton, f.o.b. mill, the loss will amount to—

$$\$3.00 \times \frac{50 \text{ x } 12.5}{100} \times 3 = \$5625 \text{ per year.}$$

This much about combustion.

Ashes and Cinders.

Wheelbarrows and shovels ought to be avoided, because there is no reason why they should be used.

Continuously running chain or worm conveyors ought to transport the ashes from chutes underneath the furnaces directly into special ash carriages.

Choice of Pressure and Superheating.

Boiler steam pressures of 120 lbs. and a superheating to a total temperature of 180 to 200° C., equal to 356 to 400° Fahrenheit; also small boiler types have lost their prestige.

It is easily told why.

The total loss of heat through radiation of the setting, etc., averages round 10% and more; therefore, the reduction of loss has to be studied.

It is easily understood that a boiler of 12,000 square feet heating surface possesses less exposed surface to the air than two boilers each of 6,000 square feet heating surface.

Large boiler units reduce the number of pipe connections, reduce space and simplify the service and control considerably. The steam and water quantity in a larger unit also prevents to a certain degree the boilers from "boiling over" caused through a high standing of the feed water.

The advantages of high grade superheated steam are as follows:—

(1) Extension of the volume of the steam. The quantity obtained from a pound of water is longer.

(2) Prevention of condensation in steam turbines and cylinder engines.

(3) Its superior quality allows its use to steam for drying and cooking purposes, after having been expanded in power engines.

Therefore, the use of superheated steam with a total temperature of 400 to 420° C. has to be recommended.

Consumption of Steam on Steam Engines with Condensers.

Type	Saturated Steam			Superheated Steam				Saving of steam with superheated steam about
	Lbs. Steam per H.P. an hour	Gauge Pressure lbs.	Calories per one H.P. an hour	Temperature in degrees calories	Lbs. of Steam per one H.P. an hour	Gauge Pressure lbs.	Calories per one H.P. an hour	
One Cylinder	14—15	125 / 150	4600—5000	300° / 350°	9—10½	180	3400—3800	26%
Two Cylinder	11—15	125 / 150	3700—5000	270°	9.6—12	125 / 150	3400—4400	8%
				300° / 350°			3200—3700	13½%
Three Cylinder	10.2—12	180	3400—3800	270°	9—10	200	3200—3600	11.7 %
				300° / 350°	8—9		3000—3300	

Highly superheated steam develops also the largest amount of power of a certain amount of coal and, as table proves, no hesitation whatever need be shown in adopting superheated steam of a total temperature of 420 degrees C. and a total pressure of 230 lbs.

In connection with high grade superheated steam, an elastic flange-packing has to be used. Valves have to be made from cast steel and filled with nickel seats and nickel discs.

The pipes ought to be carefully insulated. The drop of temperature amounts to one degree per 40 inches pipe length and drop of pressure to 15 lbs. per 50 yards pipe line, and therefore the pipe lines have to be kept as short as possible.

The steam line ought to be inclined to the boilers, so that the condensed water may flow back when the mill is shut down.

Economizers.

The flue gases leave the boiler with 250 to 300 degrees C. and 200% of this heat can be recovered with means of economizers when the draft is produced with a fan.

Water entering the economizer has to have a temperature of 30 degrees C. in order to prevent rusting of the tubes.

Example.

A boiler of 150 square meters, equal to 5,250 square feet, heating surface and a pressure of 10 atmospheres or 150 lbs. gauge.

It is to calculate how much could be saved with means

(1) Of chimney draft and economizer;

(2) Fan draft and economizer.

(1) Temperature of the flue gases before the economizer Te = 300° C. The feed water of 30° C. initial temperature has to be raised to 90° C.

The capacity of the boiler is, say, 2700 kg. = 5900 lbs. of steam. The raise of one degree of the feedwater causes a drop of two degrees of the flue gases. The total raise of temperature of the feedwater in our case amounts to 90° — 30° = 30°.

The flue gases leave above-mentioned economizer with Ta = 300 — 2 × 60 = 180° C.

To develop 1 kg. of steam with 150 lbs. gauge pressure from 1 kg. of feedwater with 30° C.; 632.3 calories

are required and the saving of the new installed economizer will amount to

$$E = \frac{60}{632.2} \times 100 = 9.48\% \text{ of coal.}$$

(2) The boiler dimensions as before:

Raise of feedwater to be 100 degrees C. The flue gases leave the economizer with

$Ta = 300 - 2 \times 100 = 100°$ C.

To develop 1 kg. of steam with 150 lbs. gauge pressure of feedwater with 30° C., 632.3 calories are necessary and the saving of the economizer with fan draft will be—

$$E = \frac{100}{632.2} \times 100 = 15.8\% \text{ of the coal.}$$

Calculation of Efficiency of Boiler Plants.

Efficiency of a boiler is the percentage of the total heat generated by the combustion of the fuel, which is utilized in heating the water and raising steam.

Efficiency of boiler = n.

Efficiency of furnace = n_1.

Efficiency of heating surface = n_2.

Efficiency of the boiler is equal to efficiency of furnace multiplied by efficiency of heating surface.

$n = n_1 \times n_2$.

n_1 ranges between 0.80 and 0.90.

Example:

A boiler generates 4000 kg., equal 8800 lbs. of steam of 12 atmospheres equal 180 lbs. gauge pressure.

Total temperature of steam, 300° C.

Feedwater temperature = 40° C.

Efficiency of boiler,

$$n = \frac{637 \times x_0}{b}.$$

b = calories of the coal = 7500 in our case.

x = cipher of evaporation, equal to water evaporated divided by coal used, both per hour.

Saturated steam to be generated under above circumstances,

$L = (606.5 + 0.305 \times t) - 40.$

$= (606.5 + 0.305 \times 190.5) - 40.$

$L = 624.6$ calories.

Superheated steam of 300° C., total temperature requires

$L = 624.6 + 0.579\ (300 - 190.5)$

$= 688$ calories.

$$x_0 = \frac{7 \times 688}{637} = 7.8.$$

$$n = \frac{637 \times 7.8}{7100} = 70\%.$$

The efficiency of good boilers averages round 70 — 74%.

The saturated steam required 624.6 calories, the superheated calories and it can be easily noted, how little heat will be used to generate high grade steam, and how much profit can be obtained in its use.

Later on we will calculate the advantages of either steam turbines or steam engines in paper and pulp mills, and how each type has to be used, to give the best returns on heat.

RECENT PATENTS AND INVENTIONS

Of Interest to Those Engaged in the Pulp and Paper Industries

An Artistic Surface on Paper.

Messrs. Knowlton Bros., of Watertown, N.Y., have been granted an English patent covering an invention for the production of an artistic surface on paper board, etc.

To impart mottled appearance to the paper or paper board, the web or layer of pulp is sprayed with a liquid with sufficient force to cause the pulp to be displaced to form crater-like depressions, with or without perforation of the pulp, while the pulp is moist or at a stage in the manufacture of the material that the displacements remain. By using sprayed liquid the material is spread to give a soft and fluffy effect which imparts an enhanced artistic appearance.

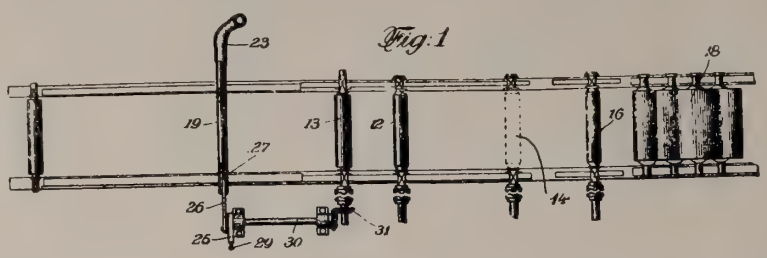
To obtain a color effect the aforesaid spraying may be effected with a liquid having colored material therein, either in solution or in suspension; or in forming the paper, paper board or like material from a plurality of webs, a color effect may be obtained by providing the web next to the top web, of a different color or shade of color to that of the top web.

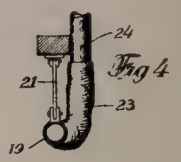
A suitable device for carrying this invention into effect consists of a perforated pipe, connected to a source of liquid under sufficient pressure, arranged transversely of the web, and preferably provided with a reciprocating motion the extent of which may, if desired, be adjustable.

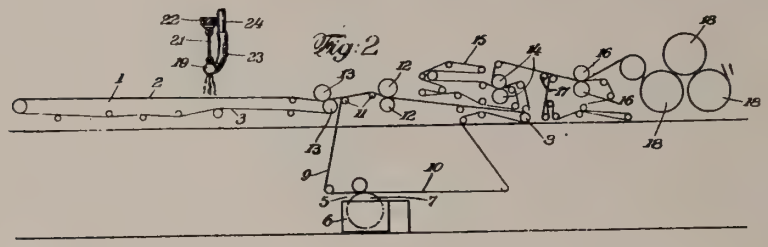
Fig. 1 is an outline top plan view of apparatus which the patentees have found may be conveniently employed in carying out the invention: Fig. 2 is a side elevation of the same; Fig. 3 is a detailed end view of a spraying apparatus; Fig. 4 is a vertical section taken on the line IV.—IV. in Fig. 3; Fig. 5 is a plan view illustrating the mottled surface of the improved material; Fig. 6 is a cross section of the same taken on the line VI.—VI. of Fig. 5.

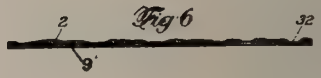
Referring to Figs. 1 and 2, 1 indicates a Fourdrinier machine which produces a web 2 sustained upon endless wire 3. A cylinder machine indicated at 5 is arranged near the machine 1 and is provided with a vat 6 having therein a cylinder 7. Cylinder 7 delivers its web 9 to the felt 10. The felt 10 extends over suitable supporting rolls 11 and is then passed between the first press rolls 12 and is then extended into suitable supporting rolls back to the cylinder machine, the felt being, of course, continuous. The web 2 of the Fourdrinier machine 1 passes between press rolls 13 and then the web 2 leaves the wire 3 and passes between the rolls 12 and is united with the web 9, whence the two are carried along together by the felt 10. The two webs thus joined after passing the supporting roll 8 leave the felt 10 and pass upwardly about supporting rolls and between the second press rolls 14. The usual felt 15 is provided adjacent the rolls 14 for removing a certain

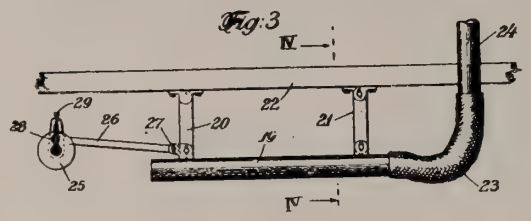
quantity of moisture from the paper. The two combined webs are then passed over suitable supporting rolls 17 to the third press rolls 16, where the web is subjected to the drying by pressure. After passing the rolls 16 the web is passed over drying rolls 18 heated by steam and during these operations the two webs become firmly united.

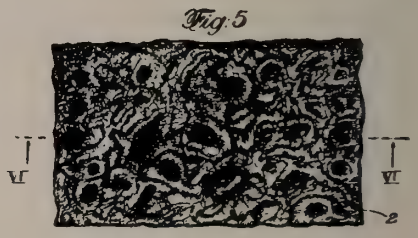












Suitably placed above the web 2 is a spraying pipe 19 pivotally mounted upon two links 20 and 21 (see also Figs. 3 and 4). The links 20 and 21 are pivotally mounted to some fixed member, as a beam 22. One end of the spraying pipe 19 is closed while a rubber tube 23 connects the other end of the spraying pipe 19 with a supply pipe 24, which feeds the spraying pipe 19 with a liquid under pressure. For the purpose of spraying, the pipe 19 is provided with apertures on its underside, through which the spray is emitted.

The spray or shower from the pipe 19 is directed upon the upper outside surface of the web 2, and in order to cause the same to be properly and irregularly distributed thereover the pipe 19 is given a back and forth motion by means of a rotating disc 25 which reciprocates a link 26 pivotally connected to a lug 27 on the pipe 19. In order to vary the throw of the pipe 19 the link 26 is pivotally mounted to the disc 25 at 28, and the pivotal point 28 is arranged to be adjusted at various distances from the axis of the disc 25 by means of a screw 29. The disc 25 may be driven in any suitable manner, as by a shaft 30 driven from gear 31 of the main machine.

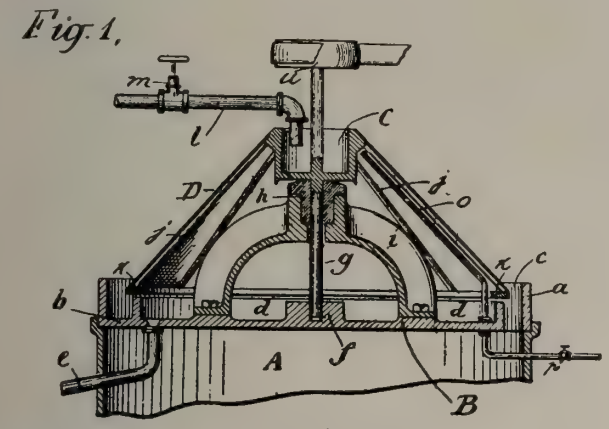
The operation relating to the separate formation of the two webs by the cylinder and Fourdrinier machines is well understood, and, therefore, need not be described. While the web 2 is on the wire of the Fourdrinier machine, it is sprayed or showered from the pipe 19 with water or other suitable fluid, the drops or streams of water displacing the pulp of the web or particles thereof in an irregular manner forming in most cases irregular and uneven crater-like depressions of various depths in the web at such stage in the formation of the web that the depressions will not refill, so that the web varies in translucency and thickness, although the under side of the web will remain comparatively smooth. That is, the pulp is displaced by the spraying at such a stage that the displacement for the most part remains. This gives the sprayed surface of the web a "wild" appearance, caused by the spraying, so that a "wild" sheet is produced, with its cloudiness appearing on the face of the sheet. The web 2 is then united with the web 9 in the well-known manner, and since the web 2 is formed with uneven depressions and varying thickness and translucency, the resulting paper, paper board, or like material, has a mottled appearance, which Fig. 5 is intended to represent. The uneven and irregular depressions may perhaps be more clearly understood from the cross section shown in Fig. 6. The webs 2 and 9 may be made of different shades or colors of pulp in which case the mottled appearance is much more apparent since the color of the web 9 may be seen through the thinner portions of the web 2. It may happen in some instances that the drops or spray may entirely form a complete aperture in the web 2, as shown at 32, in which case the under web would be clearly visible therethrough. To further increase the effect the spraying may be produced with water having therein colored material either in solution or suspension.

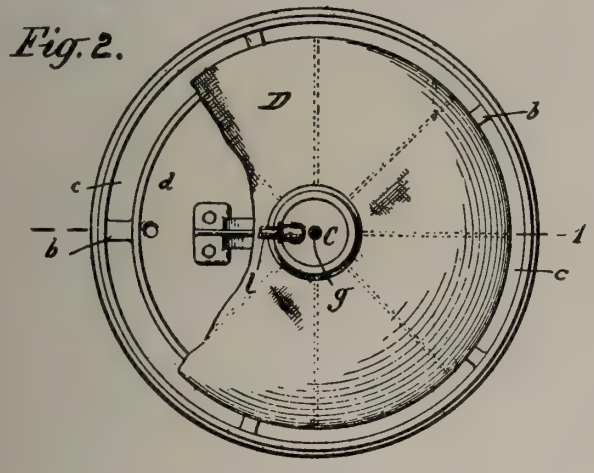
The resulting product has a peculiar and distinctive artistic appearance which make it especially advantageous for decorative purposes such as for wall-papers or coverings, panels and the like, for the purposes of binding as for example, catalogue covers, for mounting and many other purposes, to which paper, paper board, or the like readily lend themselves.

MACHINE FOR THICKENING PULP.

Charles F. Powers, of Thomson, N.Y., has been granted (U. S.) patent No. 1,046,108 on a machine for thickening paper pulp.

A machine for thickening pulp can be used advantageously after screening to thicken the stock before it goes to the beaters, and is well adapted to recover the stock present in the white water, that is, the water from which the stock has been separated, but in





Machine for Thickening Pulp.

which, nevertheless, a quantity of fine fibre is suspended, the loss of which in the long run is considerable.

In accordance with the invention there is provided a rotatable conical stock collector comprising a screen the truncated upper end of which is occupied by a circular vessel into which the white water or thin pulp is directed from a pipe, and over the brim of which it flows onto and down the screen while the screen is rotated. The water falls through the screen, and the fibre accumulates upon and flows down and off its surface. The meshes of the screen are kept clean by a stationary spray directed upwardly through the screen upon a radial line from top to bottom. The fibre, relieved from most of the water by the screen, finds its way into a stock receptacle, which is preferably a pump well.

Fig. 1 is a section on line 1, 1, of Fig. 2, which is a plan.

The machine is shown mounted upon a pump well A into which the thickened pulp is allowed to fall and from which it may be pumped to a container or to apparatus in which it is next to be treated or manipulated. The base B of the machine proper which rests upon the well A is provided with an upturned peripheral curb a from which arms b extend inwardly bridging an annular orifice c through which the thickened pulp is to flow into the well A. The arms b support a central circular trough d which is to receive the water removed from the mixture and a drain pipe e affords means of escape at all times for the water collected in the trough d.

A step bearing f is provided in the centre of the bottom of the trough d for a vertical shaft g, a second bearing h for said shaft g being located in an arched support i which is secured to and extends upwardly from the floor of the trough d. A circular vessel C is concentrically mounted fast on the shaft g above the bearing h and forms the hub of a conical screen frame which further comprises radially and downwardly extended spokes j and a peripheral ring k. A conical screen D is supported upon the screen frame extending from the brim of the vessel C to the peripheral ring k overhanging the annual orifice c in such a way that material sliding or flowing down the screen will fall through the orifice c into the well A, the curb a preventing its passage over the edge and outside the walls of the well. The white water or thin pulp is led into the vessel C through a pipe l and its rate of flow is governed by a valve m in pipe l. A driving pulley u is mounted upon the upper end of the shaft g and a belt passing around this pulley imparts rotation to said shaft and the vessel C and screen D carried thereby.

A stationary spray pipe o extends upwardly through the trough d and extends radially across the screen D. lying close to its inner surface. This pipe o is perforated to project jets of water outwardly through the screen to keep the wire faces of the screen clean and prevent them from becoming clogged. A valve p is placed in the pipe o and serves as a means for governing the spray therefrom.

The operation of the device is as follows: The screen is slowly rotated we will say at a speed of from six to twelve revolutions per minute with a machine of the size given above, and a regular flow of the white water is established through the pipe l into the vessel C. The white water flows quietly over the brim of the vessel C onto the screen D gradually percolating through the screen in its passage downwardly and leaving the fibres, which were in suspension, in a thickened pulp which flows down and off the surface of the screen. The water which passes through the screen and which is freed of fibre collects in the trough d eventually draining off through the pipe e. The fibres are usually so fine that the ordinary passing of the white water through a fine screen is insufficient to separate them from the liquid, as the rush of the water through the meshes will carry the fibres through even with extremely fine mesh screens. Therefore, in addition to the quiet overflow feed, I make use of the centrifugal action of the rotating screen to counteract in a measure the action of gravity upon the liquid, so that its normal tendency to rush through the screen apertures is correspondingly diminished. This permits the fine fibre to remain above the surface of the screen. The film of liquid quietly overflowing the brim of the vessel C in a thin sheet is constantly distributed over a wider area as it flows down the conical surface of the screen D. The flow over the surface decreases, and the weight of the water is counteracted to a constantly increasing extent as the lower edge of the screen is approached, and it is readily feasible to so regulate the speed and flow that practically all of the useful fibre is recovered in the form of a thicker pulp available to be added to the main body of pulp in the stock chest, while the waste water passing through the screen D is substantially clear.

PAPER MANUFACTURING DEPARTMENT

VEGETABLE SIZING.

Abstract Translation for the Pulp and Paper Magazine from "La Papeterie." by C. E. Bandelin.

The author of this article first states that it is not his intention to give any long theories on vegetable sizing with rosin and sulphate of aluminum, but only to indicate how to handle the sizing process in order to obtain the best results. He then asks and answers the following questions: (1) Can the sizing be done without rosin? No. (2) Can the sizing be done without sulphate of aluminum or some other chemical for the same purpose? No. (3) Are both used for the sizing? Yes. Is the sizing always equally good? No. When do variations occur? Depending upon the quality of the water used, either for preparing the rosin soap and the soap milk or for filling the beaters.

He then comments on the very great affinity which vegetable fibres have for salts of aluminum, and points out that the free rosin and the sulphate of aluminum form an insoluble precipitate of rosin and aluminum, in the same manner that aluminum reacts with coloring matters, forming an insoluble lake on the surface of the fibre and thus fixing the colors in the interior of the sheet. It is then easy to understand the changes which have taken place and why, under the same conditions, a colored paper is better sided than a white. From this it results that, in order to use a minimum quantity if rosin and effect the sizing in the best economical way, the rosin must be as finely distributed as possible. The whole question thus depends upon an intelligent preparation of the rosin soap.

The rosin soap has usually been prepared with soda, either crystallized carbonate of sodium or more frequently anhydrous, powdered carbonate, which is cheaper. The results have always caused the same troubles on account of these products seeming to bring the molecules of the rosin closer together, which is a fact, because soda is used in the soap-making for hand soaps and potash for soft soaps, which are milder and generally superior. It is usually overlooked that the rosin acts during the saponification nearly in the same manner as the oils for the soaps, but with the difference that a hard rosin soap ha never been obtained and that resinic acid is not precipitated by chloride of sodium, which is used in considerable quantities in the soap-making in order to obtain fatty acids softer than obtainable with acids.

The reason for a poor sizing has not always been found, as it has not been taken into consideration that the resinic acid forms all kinds of resinates with a surprising facility, and it is here that the question of the water used comes in, which can cause a poor result, especially when it contains lime. In the following are given two striking instances, which will be easily understood: (1) Dissolve rosin soap in water, hot or cold and containing lime, and a sandy, insoluble precipitate will be obtained, representing the best part of the sizing qualities of the rosin. (2) Make a soap with very pure water, dissolve it and add a few drops of lime water, and the same result will be obtained. Consequently the quality of the water is very important; the formation of this resinate of lime must be prevented both in the preparing of the soap and of the milk, and in the charging of the beaters in order to obtain a good sizing.

From what now has been stated it is ebident that in order to obtain a perfect and advantageous sizing, a rosin soap must be used, which can give a perfect resinate of aluminum, with exceedingly finely distributed molecules and as little susceptible as possible to form a resinate of lime with the water. The potash is then quite indicated for this purpose, as the rosin molecules will be much more finely distributed than with carbonate of sodium, which necessarily means a saving of rosin. Besides, when potash is used, there is less resinate of lime precipitated, and this resinate is absolutely insoluble. Everybody knows that a small quantity of sulphuric acid added counteracts the influence of the lime, but this operation must be done intelligently, and it is best to charge the beaters with the waste water from the wire-cloth, which, besides, has the advantage of reclaiming some fibres and part of the loading materials, which otherwise often are lost.

A good soap ought to contain 60 to 70 per cent. of fatty acids, resinic acid in our case; it should be viscous, transparent and absolutely free from lye. Such results are, however, sometimes difficult to obtain in the mills, even if one and the same labor is exclusively occupied with the preparation of soap, as the composition of the water may vary without knowing it. Besides, it could not be corrected because the potash lyes at his disposition give different results; if too concentrated they will burn; if too weak they give just as bad a result; if fresh or old they also give different results. Consequently, in order to obtain a soap perfect in all respects, it is advisable to consult a specialist. The author, therefore, is strongly in favor of using a ready-made soap, manufactured according to the indications given, a soap which it is not necessary to dissolve to milk, but which can be put directly in the beater, which means a saving of labor and steam and prevention of losses; besides, this soap also forms less foam, which sometimes is a caues of resinous inconveniences.

Finally the author gives the following advice in order to obtain a satisfactory sizing: Fill the beater with clear water, add a few cubic inches of sulphuric acid, until blue litmus paper turns faintly violet; mix then in the pulp after having made sure that there is no lime present, especially in bleached and insufficiently washed rag pulp; add the solution of sulphate of aluminum after the fibres have been well dissociated and do not lower the roll for some time, until all has been thoroughly mixed; afterwards pour in the soap solution slowly behind the roll, and continue the beating for some time and finally add the loading materials. As to coloring, it must first be found out what kind of color is to be used, in order to see if it should be added before or afterwards. Do not dry too quickly on the

AMERICAN PAPER AND PULP ASSOCIATION.

The 36th annual meeting of the American Paper and Pulp Association will take place at the Waldorf-Astoria Hotel, New York, on February 19th and 20th. The first day will be devoted to meetings of the several divisions of the paper trade, with a view to ratifying any changes or suggestions at the general meeting on the following day. The usual banquet will be held on the evening of the 20th, tickets for which will be $10 each.

WALL AND OTHER ART PAPERS.

Such paper must be well sized, or it will absorb too much of the paste applied to stick it on the wall, and colors applied to it are apt to run. The surface and texture must be uniform for the same reason. The grinding of the pulp is a matter of great importance. If it has been left coarse and long-fibred, no amount of sizing will make the paper suitable for the purpose intended, whereas finer ground stuff can be made to give a perfectly uniform paper by means of a comparatively small quantity of size.

A more or less parchment-like appearance should be aimed at. The pulp must flow uniformly on to the wire, and the paper must not be made at too high a rate of speed. It must have time to close while still on the wire. The web presses must act very thoroughly so that the drying cylinders have but little to do. The more water is pressed out of the web by the felts the loser and firmer it will be made. The first drying cylinder must heat the web only slightly as it comes from the wet press, but the second should be the hottest of the series, and from it the paper should get cooler and cooler as its drying is completed as it passes from cylinder to cylinder. For art printing it is finally necessary to smooth the surface of the paper with some enamel-like coating which will level up the same irregularities unavoidable in even the finest and best sized paper. The final surface thus obtained must not only be obsolutely smooth and level, but must be fairly hard, and at the same time elastic. Otherwise it cannot take the details of the black properly.

It must also take a good polish in the calender. Deficiency in hardness and elasticity may cause the paper to stick to the block or to smudge. The surface must, nevertheless, not be so hard that it will not absorb any ink. The ink must not be merely superficially imposed upon the paper.

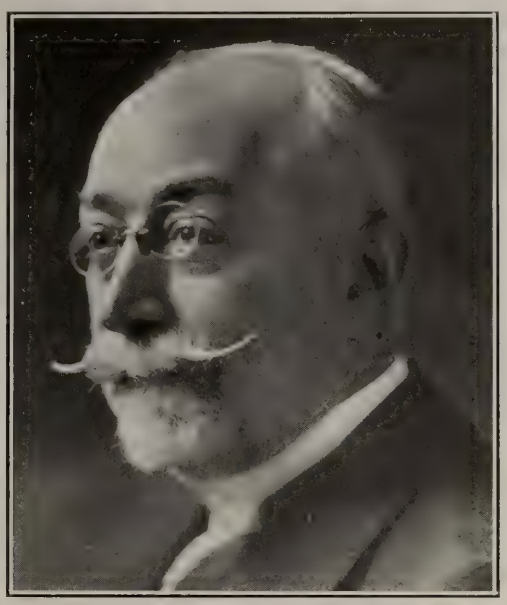
The final satinising after printing does away with any irregularities caused by the process.

POST'S PAPER MILL DIRECTORY, 1913.

The 1913 edition of the above well-known work has reached this office. It forms the usual well-known epitome of useful information to pulp and paper mills and to all those interested in any branch of the paper and allied trades. The following list of chief contents will indicate the scope of the work: Pulp and Pulpwood Statistics; Sizes of Paper and Their Names; Indexes to Mills and Mill Officers; Buyer's Guide to First Hands; Paper Mills in United States and Canada; Ground Wood and Chemical Mills in United States and Canada; also the same classified; Dealers and Jobbing Houses in Paper in United States and Canada; Paper Stock and Rag Dealers; Paper Box Manufacturers, and of Folding and Corrugated Boxes; Paper Bag Manufacturers in United States and Canada; Glazed and Coated Paper Waxed and Vegetable Parchment Manufacturers; Cardboard Manufacturers; Envelope Manufacturers; Gummed Paper Manufacturers; Watermarks; Trade Associations; Projected Mills; besides a quantity of valuable miscellaneous information. The book is clearly printed and well bound and is published by L. D. Post, Tribune Bldg., New York City. Price, $2.00.

MR. S. J. B. ROLLAND.

The accompanying illustration is a portrait of Mr. S. J. B. Rolland, who was recently appointed president of the Rolland Paper Company, Montreal, in succession to his lamented brother, the late Hon. J. D. Rolland.



MR. S. J. B. ROLLAND
President Rolland Paper Co.

He is well known among the paper trade, both in connection with the St. Jerome mills and with the reorganization of the St. Adele mill.

FORMATION OF FOLDS WHEN LINING PAPER.

A very disagreeable occurrence when lining good straw board, and also when lining both sheets of paper and rolls, is the formation of folds in the gummed paper. When lining rolls care must be taken that the apparatus for unwinding and guiding the gummed paper is in a perfect condition, in order that the web of paper may run perfectly smoothly and have the proper tension.

The guide roll arranged directly at the rear of the paper roll to be unwound must be located so that the web of paper is sharply bent at this place, even when the paper roll gradually becomes smaller and smaller. The web of gummed paper is greatly aided in lying flat, both when it is wet and when it is dry, by employing a few guide rolls having spirals of wire soldered on, running from the middle to the outside. The brake at the unwinding rod must be sufficiently powerful in order that the paper is always tensioned uniformly. All the rollers must be exactly parallel with the unwinding rod, sufficiently stable and exactly round.

Under certain circumstances it may happen that the cylindrical shape is deformed by dirt. If the web is tensioned too little at one or both sides this can be remedied by enlarging the periphery of the rollers at the ends of the paper web by letting strips of paper run on them. For preventing folds it has been found preferable to drive the paper guide rolls separately, their speed being somewhat higher than that of the paper. The driving gear of these guide rolls must be capable of being connected and disconnected separately, and of course, is employed only in the event of its being necessary, owing to the formation of folds.

SAND IN PAPER.

By Pauli.

Especially Trans. for Pulp and Paper Magazine.

One of the worst nuisances that can happen to a printer is when there is sand in his paper. Carefully prepared plates have been spoiled for many printers by small but numerous particles of sand. It may, therefore, be advisable to try to find out the causes for the occurrence of sand in paper and to point out how this nuisance may be prevented, or, at least, how its consequences may be to a considerable degree remedied.

Wood cellulose, ground wood pulp and refuse paper are the most important raw materials in the manufacture of printing paper. Wood cellulose can always be regarded as free from sand, as no reason for its occurrence is at hand during the manufacture. On the contrary, the sharpening of the grindstones in the ground wood pulp mills is a source of sand, and it is often unavoidable, that small particles of sand for this reason arrive in the pulp. The occurrence of sand in pulp from old papers is also usual, as it can come both from the edge-runner and through careless storage and packing. It is easy to become convinced of the last-named fact, if, for instance, white bookbinder cuttings are taken on the assorting table. It is astonishing what a quantity of sand will be found under the table.

By none of the raw materials named, however, can so much sand be introduced into the paper as by the use of inferior grades of fillers. In many kaolins it cannot be noticed how much sand they really contain. If such inferior clay is stirred up in water and passed through a sieve, so can an idea be obtained, how much cautiousness must be used, in buying and using loading materials for printing papers.

In the following will be mentioned some papers in the manufacture of which the absence of sand is of special value.

Sand in the paper is very disagreeable for printing paper in rolls, but still worse in book paper and paper for lithographic and autotypic impressions. The use of an unsuitable paper is especially for the last-named printing method, a source of many difficulties.

Of most importance in the use of a paper for sensitive plates and cuts is the quality of the surface, and, besides, also softness and suppleness. In order to obtain an especially even and easily printed surface, the paper is often given a white coating. In this way all rough places on the surface, all splinters and particles and knots in the raw paper are covered with an exceedingly easily printable layer, which reproduces all the fineness of the print and protects the plates from being hurt. But if an inferior paper is used for sensitive prints on account of ignorance or economy, so will the cause of the lack of success often be ascribed to the papermaker. White paper with only one side smooth is, for instance, used for lithographic prints, posters, etc. The high finish on one side permits the print to dome out very sharp and gives it a brilliant appearance; the other side often contains much sand, which has not been made harmless as in the calendered or coated papers, but which would soon, if used for printing, cause damages to plates and types.

If a one-sided finished paper must be used for some special purpose, it must first be passed through a calender after having left the drying cylinders. The sand is then either pressed into the paper, so that it becomes harmless, or the particles are squeezed to pieces and the resulting small holes are closed on account of the pressure of the calender. Paper treated in this manner is easily sold and has got an always increasing demand.

The paper would, however, obtain another less desirable character if the sand was to be made harmless on a super-calender; the rough side would then become too smooth.

The occurrence of sand can cause considerable difficulties, also in cheaper grades of paper, as, for instance, in bag paper. These grades are mostly cut in the mills in smaller rolls in order to fit in the bag machines. Many manufacturers have complained, when using such papers, of the occurrence of longitudinal cracks or slots, which look as if having been cut with a knife. This occurs especially in one-sided smooth papers and depends only upon the presence of sand in the paper, which has stuck to the rolls of the rolling machine and caused the slots in the paper. A treatment with a calender is very suitable also for such paper and would certainly prevent complaints from the bag manufacturers over cracks and slots.

The work of the riffler on the paper machine must, of course, be given special attention, when raw materials, rich in sand, are being used, such as old papers, refuse, etc.

A sufficient dilution of the pulp, big enough rifflers and an effective construction of the sand catchers are here of most importance for a good result.—Papier Zeitung.

PROBLEMS OF PAPER SPECIALTY MAKERS.

The Pulp and Paper Magazine believes so firmly in the great future ahead for specialties, novelties and new general uses for paper products that no apology is needed for reprinting the following admirable article on the subject by C. J. Morrison, in Paper:—

The problems of manufacturers of paper products begin, he says, where those of the paper-makers end. Nevertheless, they meet many of the same troubles, such as difficulty of maintaining proper tension on the paper, cracks, tears, stretch, changes in humidity of the atmosphere, etc.

The manufacturers of paper products have before them the great problem of extending the uses of paper. In this work they should be assisted by the paper-makers, as the returns would be of mutual benefit. Rapid strides in development have been made, but there are many fields unexplored and others that are only partly developed.

Paper seems to be regarded at present as the one sanitary container. Paper drinking cups are coming into very common use, but even this field is only slightly developed and the cups are not on sale generally. Moreover, they have only been exploited for use at public fountains, while there is no reason why they should not be in general use in the household. Restaurants should serve water and milk, and, with proper development of the paper, all other beverages, only in sanitary paper containers. Bars should have no other kind of vessels. In fact, the possible development in this field is tremendous.

Butter has been protected by paper for several years. Milk, oysters, meats, bread, etc., should be similarly protected. The butcher should no longer cut off a piece of meat and roll it in a piece of paper so that both ends are exposed. He should place it in a sanitary container and seal it.

A common experiment of high school boys in the physical laboratory is to boil water in a paper bag, yet it is only recently that paper containers have been used for cooking. They are ideal utensils for cooking many dishes and the field can undoubtedly be greatly extended.

The writer has been waiting for years to see paper come into common use for clothing, but little development seems to be made in that direction.

This, in spite of the fact that paper is to-day the best possible clothing. It is light, warm, sanitary, and can be made waterproof and almost fireproof. At present we wear our germ-laden clothes day after day. One shudders to think of the disease germs which must be held by the clothes after a day spent among the mixed crowds on the streets and in the trolley cars. Paper clothes would be discarded each evening and fresh ones donned for the protection of the home.

In order to make these great extensions of the paper business it will be necessary to conduct a comprehensive campaign of education. It may even be necessary to make house-to-house demonstrations, as was done in the case of baking-powder. Every kitchen to-day uses baking-powder, and everyone should make a more extensive use of paper. Only a few of the possible uses have been mentioned. In fact, some of the possible uses have probably not even yet been thought of. There is little danger that such an extended use would exceed the supply of paper, as new sources of pulp are being continually discovered or developed.

In this country, we are apt to consider these suggested uses for paper products as idyllic dreams, such as those indulged in by the author of "Looking Backward," or of some other such impracticable author who is dealing with conjectural conditions of an imaginary world.

At the present time European manufacturers are far ahead of paper manufacturers in the States in the uses to which they are putting paper products. Paper drinking cups (not paraffin) have been in use in Germany for years.

The use of paper as the basis in the manufacture of bags, towels, cloths, carpets and other textile fabrics has not only been theoretically demonstrated, but has been developed as a very profitable line of business in certain European countries.

The preferred process for manufacture in this class of goods is by treating sheets of paper of various colors and quality, depending upon the use to which it is to be put, with an adhesive substance to which is applied cotton, wool or flax fibres. The paper is then cut into strips of about one-half inch in width, which is twisted into a thread. The strength of fabrics woven from threads of this construction is amazing. With a fabric of which 90 per cent. is paper demonstrations have been made, in many cases proving a greater tensile strength in these fabrics than in the pure cotton fabrics costing from two to three times as much. Although these goods are being used, even in cases where particularly hard strain is to be put upon the goods, such as with denims, etc., very satisfactory results have been obtained.

Five years hence fabrics having a paper basis are going to have an enormous demand and consumption in the European countries, and the American paper mnufacturers will alone be to blame if they neglect the opportunity to develop this untouched and highly lucrative field.

In many enterprises were the field for development is great there is usually little attention given to economy of production. This is largely for the reasons that all the product can be readily marketed, and the consumers have no basis upon which to compare prices. The bicycle and automobile industries are typical examples of this condition. In the early days almost any price could be obtained for a very inferior article, but each year sees a decided decrease in price and an improvement in the article. To-day a better bicycle can be purchased for $25 than was sold a few years ago for $150.

In the paper industry the conditions are somewhat different. Here the consumer is offered an article to replace an article that he is accustomed to use. Not only that, but the paper article is supposed to be used and discarded, while the old article was used over and over. Consequently the paper articles must compare favorably in price with the burden charges on the other articles. For instance, in the case of paper containers for milk, their cost for a year's supply to a dairy must be comparable with the expenses of maintaining the glass bottles, such as interest on investment, replacements, collections and washing. In this particular instance the paper has to meet exceedingly keen competition, but in other cases the competition is nowhere nearly as keen. However, in general, the competition is such that the manufacturers of paper articles must exercise the most rigid economy.

The first and possibly the simplest economy is in the use of raw material. The articles must be so designed and so laid out that the least possible scrap or waste will be made. This statement is so obvious that it almost seems as though there was no necessity for making it, but cases have been noted where the principle was utterly disregarded. In one specific instance a slight change in design, which in no way affected the finished article, reduced the amount of scrap 50 per cent. In another case a change in the method of laying out the article made it possible to use a common stock size of paper instead of a special product. This not only reduced the cost, but eliminated exasperating delays waiting for stock.

Careful studies should be made of the specifications for stock material and every effort made to discover cheaper material which possesses the necessary physical and chemical qualities. There is always a great tendency to assume that an article must always be made from a certain stock because it has been made from that stock for a number of years. Such a frame of mind is a bar to progress. Only recently a manufacturer was asked why he used a certain expensive stock and replied, "Oh, we have always used that! Nothing else will do." Persistent repetitions of Why? only tended to make him angry and brought no additional information; yet a very little independent experimenting showed that the article could be made from a much cheaper base.

In the manufacture of paper products the chemical and physical properties of the paper are of great importance and must be very carefully worked out. The tensile strength, bending properties, thickness, weight, etc., are important. The leading qualities possess three typical characteristics—ability to resist bending, ability to bend without cracking and stay bent, and ability to bend and return to former state without permanent deformation. The chemical properties will differ greatly with the different uses for which the paper is intended. It is the problem for the manufacturers to secure that delicate balance among the various properties that will give the article its exact requirements.

Other substances besides paper must be carefully studied. One of the most important of these is glue. Many paper products require a glue which is easy to

handle, will dry quickly, is strong and will not cause the paper to pucker. The quickness with which the glue will dry is extremely important, as a few seconds lost waiting for the glue on each article to dry amounts to a great loss in the course of a day. At one plant a change in glue increased the output 40 per cent.

In order to get the best returns from the waste it must be kept clean, free from all foreign matters, and the different grades must be kept separate. It is usually advisable to compress the waste into bales.

Although it is important to so care for the waste that it will bring the highest price, it is far more important to care for it so that there is no interference with the operations of the plant. The waste must not be allowed to accumulate in such quantities as to interfere with the work, nor must the removal of it block operations. One department of a certain well-known plant was formerly shut down for half an hour each afternoon while waste was removed. Not only was there this great loss of productive time, but for a couple of hours before removal the large accumulation of waste greatly restricted production. A slight rearrangement of machines, an equipment of boxes on wheels and a provision for the continuous collection of waste solved the problem. In passing it might be well to note that the rearrangement gave better light and better power distribution.

Scarcely enough attention is given to the manufacture of papier-mache. Many useful articles can be made of this material, which should be a by-product of any plant which manufactures paper articles on a large scale. A campaign of advertising and education would greatly increase the use of papier-mache.

In the perfect plant everything assists in production. There is no waste. With this idea in mind the least important employe must be made to contribute his quota. The human element must be carefully studied and ways and means devised to secure both the confidence and co-operation of every employe. Each one must be encouraged to make suggestions for improvements and some recognition must be given to each suggestion. If a suggestion cannot be used, the employe making the suggestion must be shown the reason, and when a suggestion is used proper payment must be made for it. A fatal mistake is to have a fixed price for suggestions. In one large plant each suggestion, whether used or not, was acknowledged by a not signed by the president of the company. This policy pleased the employes immensely and the very fact of the president's attention put a stop to trivial suggestions.

WALL PAPER TRADE.

Last year Canad sent wall paper to the value of $19,555 to New Zealand, as compared with a value of $2,340 in 1910 and $905 in 1909, and this year the total will be much higher than last according to a report of Mr. W. A. Beddoe, the Canadian Trade Commissioner at Auckland, to the Trade and Commerce Department. Mr. Beddoe says:—

"During the season of 1910 a direct representative of a Canadian wall paper firm visited New Zealand and personally called upon the importers. The designs and materials were favorably received, and a good business resulted. The sme representative repeated his visit last year with even more satisfactory results. The results illustrate the advantage of sending direct representatives to New Zealand. Canada in each year securing a larger proportion of the wall paper trade."

CELLULOSE AND PAPER MILL CHEMISTS.

The annual general meeting of the German Verein der Zellstoff und Papier Chemiker was held in Berlin at the Papier haus, on December 2nd and 3rd. General business of the society was followed by the reading of technical questions raised by members with replies and discussion. Mr. Curt Zorn exhibited and described various chemical novelties in connection with cellulose and paper. Short papers were also read, including items by Professor Klason on "Rosin," Messrs. Beadle and Stevens on "Detection of Manilla hemp," Dr. Max Muller on "Colored paper-machine backwaters," and others. The programme comprised, among other items, papers by R. Eichmann on "Cost Calculation of Rag Half-Stuffs," K. Hartung on "Heating and Ventilation of Machine Rooms." Dr. E. Heuser on "The Rosin Sizing Process," Dr. Mysz on "Steam Turbines," Dr. Max Muller on "Problems of the Soda Pulp Industry," and several others.

LOCKWOOD'S DIRECTORY FOR 1913.

The 38th edition (1913) of Lockwood's Directory of the Paper, Stationery and Allied Trades, comes to hand as complete and satisfactory as ever, and with the additional advantage of some new features. The chief of these is a department of paper specialties, showing under classified headings the names and addresses of firms that convert paper to special uses such as manufacturers of paper drinking cups, paper towels, and many other comparative novelties. There is also a department of statistical information, inserted in order to incorporate particulars of the 1910 census. Another feature is a new classification of paper box manufacturers, whereby those making stiff, folding or corrugated boxes are properly indicated. These additions, however, in no wise detract from the size and completeness of the usual lists of pulp and paper mills, manufacturers of various kinds of paper, stationers, envelope makers, trade associations, watermarks and brands, etc., etc. which make this book so invaluable to all branches of the trade. It is published by the Lockwood Trade Journal Co., 150 Nassau Street, New York. Price $3.00.

Many cotton fabrics undergo a special chemical treatment with strong caustic soda. Such "mercerised" cottons are readily distinguished by the silky lustre which the caustic soda treatment produces. Dr. Carl G. Schwalbe suggests that for certain purposes, papermakers would do well to have the mercerized cottons sorted out and used separately. These mercerized rags should possess particular advantages for the manufacture of blotting papers, since the caustic treatment removes the waxy skin of the fibre and increases its absorbency in a high degree, as compared with the ordinary cotton fibre.

T. J. Marshall & Co., London, have brought out another of their famous miniature machines, suitable for experimental work in pulp and paper. This time it is a model edge runner, particularly adaptable for ascertaining the effect of incomplete boiling, and we understand that one has been supplied to the Forest Service Branch of the U.S. Department of Agriculture. Other miniature machines made by this firm were their famous 4-inch paper making machine, mechanical wood pulp grinder, model beaters, etc.

PULP MANUFACTURING DEPARTMENT

RECOVERY OF PULP FROM WASTE NEWSPRINT.

A large, if not the largest, part of all paper produced is used for printing of daily newspapers and cheap periodicals, circulars, etc., and is thereby converted into waste almost before the ink of the printing has dried thereon. The very large demand for these grades of paper, and the growing scarcity of wood, press the necessity to recover the pulp from such waste papers in a condition suitable for using it for the manufacture of the same grade of print papers. This could not be done heretofore, owing to the circumstance that the solvent agents, specified in the various processes heretofore known for the recovery of pulp from waste papers, produce a marked discoloration of the fibres of the "mechanical" wood pulp (ground wood) which is quite largely used as a substitute for the chemical pulp in the manufacture of so-called newsprint and of other cheap grades of print paper; these processes and the solvents specified therein cannot be used for the recovery of pulp from such waste newsprint papers and other grades of paper containing a proportion of such mechanical wood pulp.

There are, however, some kinds or makes of such newsprint and of other similar grades of paper, requiring to be boiled in the solvent solution or subjected to its action under a high temperature, to dissolve the sizing or to effect a complete dissociation of the pulp fibres therefrom; such a treatment of the waste papers is also sometimes required to completely dissolve the adhesive ingredients of the printers' ink, and to enable the carbon or other pigment to be separated from the pulp fibres and to be removed by washing.

J. M. Burby, of Astoria, N.Y., has invented a process for the recovery of pulp fibres from waste papers containing a proportion of mechanical wood pulp (ground wood) in which process such waste papers may be boiled in the solvent solution or subjected to its action at a high temperature, without producing the discoloring and other detrimental effects upon the fibres of this mechanical wood pulp. This object is attained, he claims, by employing for the treatment of such waste papers a solution of borax, and the process is based upon his discovery that borax is a solution that does not produce a discoloration of the fibres of the mechanical wood pulp, and does not perceptibly affect their other physical properties, when such waste papers are subjected to its action at high temperatures, or are boiled therein, or even if the borax solution be stronger than required to dissolve or saponify the adhesive ingredients of printers' ink and the cohesive ingredients of the sizing employed in the manufacture of such papers.

He says his experiments have demonstrated that if such waste newsprint papers are boiled in, or subjected under a correspondingly high temperature to the action of, a solution containing approximately two pounds of borax in one thousand pounds of water, the oily and resinous ingredients of the printers' ink, and the cohesive ingredients of the sizing, are liquefied and saponified sufficiently to enable the fibres of the pulp to be separated therefrom, and that even a more concentrated solution of borax may be used in this way, without producing the discoloring, or any other detrimental effect upon the fibres of the mechanical wood pulp contained in the waste papers thus treated. The waste papers may be thus treated before being pulped or after having been pulped; the most practical method is, however, to use the borax solution in the beating engine.

If the waste papers are to be treated with the borax solution after having been pulped in the beating engine, the quantity of water contained in the pulped material must be taken in consideration in determining the quantity and the initial strength of the borax solution to be added thereto.

The most practical way of conducting the process of recovering pulp from waste newsprint and from other grades of paper containing mechanical wood pulp, according to Mr. Burby, is as follows:

A quantity of the borax solution, heated to near its boiling point, is filled into the tank of the beating engine, the beating engine is started, and the waste papers, after having been dusted and roughly separated, are successively thrown in. A further supply of the borax solution and of the waste papers are successively added until the tank is filled to the full capacity of the beating engine. To secure the best results, about 15,000 pounds of the solution should be used for every 1,000 pounds of dry weight of the waste papers to be pulped in the beating engine and the initial strength of the solution should be somewhat in excess of the stated standard (two pounds of dry weight of borax to 1,000 pounds of water) because the borax contained therein is quite rapidly being consumed in saponifying the oily ingredients of the ink, which are first acted upon by the solution. The action upon the cohesive ingredients of the sizing takes place later, that is, when the waste papers having become thoroughly permeated by the solution. The initial consumption of borax amounts to about eleven per cent., and is greater, if less than 15,000 pounds of the solution is used for each 1,000 pounds of the dry weight of the waste paper stock.

By the time when the waste papers are thoroughly pulped, all cohesive ingredients of the printers' ink and of the sizing are dissolved or liquefied, and the insoluble impurities, like the pigments of the ink, clay or other filler and the like, are commingled with the pulp fibres. The pulped material is then discharged from the beating engine into a chest, the liquid drained off, as far as is practicable to be done without pressing, and the pulped material washed with fresh water. This washing can be done in the chest, if the chest is provided with some mechanical device for agitating the pulped material and disposes of the borax solution, and of the sizing remaining in the pulped material after draining. It is preferable to employ a mechanical agitator in the chest to save the handling of the material. The washed material is then conveyed upon screens, or other suitable apparatus, where the insoluble impurities, like printers' ink, clay, filler, etc., are separated from the pulp fibres and the latter collected.

Instead of pulping the waste papers in the borax solution they may be subjected to its action after having been pulped in the beating engine. In such a case the pulped material is conveyed from the beating engine into a chest, provided with a mechanical agitator, the solution, in quantity and strength to be determined upon consideration of the quantity of water contained in the pulped material, is added thereto, and the me-

chanical agitator set in action. The chest should be provided with means for heating the solution and the pulped material, and the heating and agitating of it should be continued for about one hour or less. Then the liquid is drained off, as much as it can be, the pulped material washed with fresh water and conveyed upon screens, where it is treated in the same way as explained above to separate the pulp fibres from the impurities.

If the waste papers are to be treated with the borax solution before pulping them, they must be first dusted, and roughly separated, before being charged into a boiler, or other suitable apparatus, filled with the borax solution. Approximately the same proportionate quantity of the borax solution should be employed. The boiler should be provided with means for heating the solution and it is desirable to provide also some means for agitating the papers while they are being acted upon by the heated solution. This treatment should be continued for not more than an hour and then the liquor is drained off, the waste papers discharged into a chest and after being washed in fresh water are conveyed into the beating engine. The pulped material is pumped upon screens and there treated with streams of water to separate the pulp fibres from the insoluble impurities, and the clean pulp collected. The pulp recovered by either way of conducting the process does not require any further treatment and may be conveyed to the paper-making machine, or stored for future use.

Another method is the subject of a patent issued to C. K. Hahnle, of Reutlingen, Germany. It is said to avoid the drawbacks of the old processes, and by it an economical cleaning of the old paper is rendered possible. This effect can be attained only in case the method is carried out exactly as explained and the following point of views are considered.

First of all, the connection between color or ink and paper must be so much loosened as to render possible a complete washing out of the impurities in the subsequent process. In order to cheapen as much as possible the whole process the diluted solution of alkali employed requires to be recovered after its use and to be repeatedly used over and over again in the following operations, so that always only the quantity of alkali lost or consumed in the previous process need be compensated for.

It is for this reason that at the moment that the alkali is about to be recovered, the paper requires to have essentially maintained its structure, in other words it should at this moment not yet have been turned into a pulpy mass, since otherwise the recovery of the alkali would be practically impossible. The old paper so preliminarily treated then requires to undergo a most extensive mechanical disintegration, whereupon the washing of the finely divided material on sieves by means of sprinklers is effected.

A further essential feature of the new method consists in that during the disintegration subsequent to the treatment with alkali every objectionable pressing effect is avoided. The new method is as follows:

The old raw materials are first soaked with a diluted lye, until the connection between the paper and the color or ink is sufficiently loosened, then subjected to a light pressure for squeezing out the liquid. This is best effected by means of an endless sieve, which receives the material and conveys it between several consecutive pairs of lightly loaded squeezing rolls, whereby the excessive quantity of lye is squeezed out. The liquid flowing off is returned to a reservoir in order to be afterwards restored to its initial state.

The transmission of the material and the removal of the lye may, however, also be effected by means of a tapering conveyor or any similar device.

The material thus preliminarily treated is then put in a vessel and a convenient quantity of water is introduced, whereupon the material is reduced to fibres by means of twirls or agitators, so that the printers' ink and similar inks gradually separate from the fibres. Care should be taken to protect the mass from pressing effects. Agitating apparatus of any improved construction may be employed. which are capable of finely dividing the material by means of rotary agitators or twirls. The apparatus known in Germany as "Glockenzerfaserer" are particularly suitable for this purpose. In order to free the fibrous mass from the loosened impurities, it is now placed on an endless belt of fine wire gauze and passed therewith beneath sprinklers, so that the sprays can carry off the impurities. At the delivery end of the sieve the completely cleaned fibrous mass can be taken off.

The process can be carried out continuously, even for the largest quantities, and requires but small quantities of chemicals and small outlays for wages and driving power, so that it can be employed most advantageously for all sorts of old papers, also for papers of the lowest quality.

MANUFACTURE OF SULPHITE PULP.*

By Charles M. Bullard.

In the year 1884, at Rumford, R.I., the first sulphite mill in America was built and operated by the Richmond Paper Company. Since that time there have been built 102 sulphite mills in America of approximately 5,200 tons daily capacity in bleached sulphite fibre.

To produce this enormous amount of fibre, it is safe to say that approximately 12,000 cords of wood, 1,500,000 lbs. of sulphur and 1,200,000 lbs. of lime and its equivalent in limestone is used per 24 hours, or an average of 2¼ cords of unpeeled wood, 280 lbs. of sulphur, and 235 lbs. of lime per ton of product.

In discussing the various phases of sulphite manufacture, this paper will deal with the unbleached product only, and to determine the amounts of raw materials used on a bleached basis it is safe to add 10 per cent. to any figures given.

The most expensive raw material entering into the manufacture of sulphite pulp is wood. Its price varies greatly in different localities and under varying conditions and is steadily advancing from year to year. It is safe to say, however, that it will not average less than $8 per cord, and that an average of 2¼ cords is used per ton of sulphite produced. Figuring on this basis the total amount of wood used is costing the mills approximately $96,000 per 24 hours of $18 per ton of product.

The next expensive raw material is sulphur. Its price varies but slightly for different localities and averages $23 per ton, therefore the mills will spend about $18,000 per 24 hours for this material, or on a tonnage basis their sulphur is costing them $3.64 per ton of sulphite.

Lime is the cheapest material used and its average cost is 30c. per hundred. The average amount used is 235 lbs. per ton, therefore this material is costing the mills $3,600 per 24 hours or about 71c. per ton of product.

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*Read at the Eighth International Congress of Applied Chemistry, New York.

The users of sulphite to-day are demanding more and more as regards strength, color and cleanliness, and to meet this demand and still make a fair margin of profit the manufacturers must necessarily reduce the cost of production in every possible way, as their profit does not so much depend on the market price, which is fairly stable, as on the cost of production.

The manufacturers do not appreciate the countless ways where scientific control of every stage of the sulphite process will surely aid them to reduce this cost, and still maintain or improve the quality of production, and the sooner they realize that the old "rule of thumb method" so much in vogue in the past should be supplemented by the latest and most improved methods, the sooner they will be enabled to pay greater dividends and still compete with European manufacturers, where the cost of labor and raw material is much lower than in America, and especially in the United States.

The lack of scientific control and failure to make use of scientific methods in the average mill is the direct cause for the needless expenditure of large sums of money during the process, for such results as they are getting, both as to cost of production and quality of product, and were they to skillfully compare their operations in every stage of the process and the results therefrom with those of the few who have applied scientific methods and given them a fair trial, they would at once appreciate the value of these methods.

A very few have made use of these methods and control in their lumbering operations and by so doing have demonstrated their value. In the majority of cases, however, these operations are costing the manufacturers or operators excessively in labor, but what is of equal or more importance is the question of wood waste.

The writer has seen many instances where this waste was enormous. Large quantities of available and valuable wood in the form of stops and large limbs are left scattered broadcast, which are a menace to standing timber from fire. Another large loss is due to not cutting close enough to the ground and many tons are unskillfully felled in inaccessible places where they are left to decay. These losses are mainly due to the lack of appreciation of what could be saved were these operations scientifically controlled.

In the handling, storage, and delivery of wood to and through the wood room, it is remarkable what can be done in many mills by carefully studying their individual needs and conditions. In one instance out of many, the wood room cost $1.37 per ton. Their needs and conditions were carefully studied and various changes made in apparatus and methods, with the result that more wood is being handled with less labor and waste, at a cost of 61c. per ton, and there is still room for improvement.

A good deal of argument has come up from time to time as to which was the more economical method for barking wood, to peel it in the woods during the peeling season or at the mill by the usual mechanical method. It would seem that the former method was to be generally favored as the loss is about 9 per cent. as against an average of 25 per cent. by mechanical barking, and in many instances will run much higher.

The former method will certainly allow much more thorough and uniform drying or seasoning, which is highly important, and when the wood is delivered to the mills by rail and the freight charged by weight as is usual, we should expect a very large saving in the first cost of wood.

Wherever wood is being barked at the mill by the usual mechanical method (by the use of the ordinary disc barker) the use of scientific methods will show very large savings in wood wastes and increased capacity of wood room. Many careful tests made by weight have shown the loss during this operation to run as high as 30 per cent., when under proper conditions this should not run 21 per cent., and in some instances even less. Such conditions actually exist, and the savings which it is possible to make are therefore very apparent.

A very recent instance of what can be done in this direction will serve to illustrate the value of proper control of the barking operations. A mill was barking approximately 200 cords of wood per day. Careful tests made by weight showed a loss of 18½ per cent. during this operation. Various inexpensive changes were made, principally by changing the speed at which the stick was turned while in contact with the barker disc, increasing the speed of the disc, decreasing the set of the barker knives, and then tests made showed the loss to be reduced to 22 per cent., or a saving of 6½ per cent., equivalent to 13 cords saved per 24 hours.

The yield per cord and quality of fibre is very largely controlled by the uniformity of chips produced, and this uniformity, as well as the amount of sawdust and sulphite screenings (which are a direct loss) are directly controlled by the conditions of the chipper, its speed and the manner of supplying the wood to it. The average amount of sawdust which is a clear loss is not less than 5 per cent. of all wood chipped, while the sulphite screenings will not average less than 5 per cent. In the majority of cases these two losses can be reduced 40 per cent. by scientifically controlling the chipping operation, which when done represents an enormous saving to the manufacturers.

Very recently a mill was chipping wood for 50 tons production. Careful and exhaustive tests were made to determine the uniformity of chips produced, and the amount of sawdust was found to be averaging between 6 and 7 per cent. and a slightly larger amount of coarse chips, slivers and large pieces of uncut wood were formed, which on entering the digesters with the good chips were scarcely if any affected by the acid during the cooking operation, and eventually were lost as screenings.

Careful attention was given to the condition of the chipper as regards grinding and setting of the cutting knives, face plates and bed knife. The speed was then changed and the men attending the chipper instructed as to the best method of delivering the wood to it. After these changes were made, other careful tests showed the loss in sawdust to be reduced 51 per cent. and the large chips and uncut wood, which eventually turned up as screenings, were reduced 46 per cent. This represents a very large saving in wood and increased yield per cord.

The acid plant is the heart and nerve centre of a sulphite mill, and is usually the most neglected department. At no stage of the whole sulphite process will scientific methods and control show greater return than here.

Many manufacturers seem to think that any one who can shovel sulphur into a burner at his own discretion is fully capable of handling this very important operation economically and efficiently. They apparently do not appreciate the superiority of one type of burner over another, the requisite economy, the most efficient draft to carry on them under varying conditions, and the best method for supplying or feeding sulphur to them. Many, and I may say the majority, do not seem

to realize that without proper air and temperature control in the burners, from 5 to 10 per cent. of sulphur burned may be oxidized to SO_2 (nor make any attempt to determine this), which in itself is a direct loss, but later in the operation will cause still more loss in lime from the formation of calcium sulphate. This in turn causes another loss in labor, production and innumerable troubles by the plugging up of pipes, bottoms of digesters and blow-pits, and eventually shows up in the finished product.

The strength and purity of gas produced on entering the acid systems is not given the attention which it demands for the best results and the majority of mills do not even make analysis to determine this. If every manufacturer realized the importance of eliminating every air leak throughout the entire acid making system, properly controlled the temperatures during the various stages of the process, doubled and in many instances trebled the lime slacking capacity, properly introduced and distributed the digester relief in the acid storage and reclaiming tanks, with proper temperature control, they would be astonished at the great improvements in efficiency and economy during the acid making process, as well as the decrease in the consumption of sulphur and lime per thousand gallons of acid made.

It is remarkable how little it takes to demoralize the acid making process which will cause the cost to go up with leaps and bounds, and still how simply and economically this proces scan be handled by applying scientific methods.

The cooking of wood requires the most careful and uniform control if the best results as regards maximum yield, strength and color are obtained. These results are directly controlled by pressures and temperatures carried in the digesters and manner of relief during this operation, and were the manufacturers to realize this and carry on this cooking operation on a scientific basis, very greatly improved results would be obtained.

Many do not seem to appreciate the ill effects of high temperatures, especially during the first part of the cook, and this being controlled by the relief, directly influences the retention of acid strength during the cook so necessary for the best results.

It is quite impossible to make any set rule as to the exact manner in which every digester should be handled, as conditions vary so widely in different mills, and it is therefore necessary to scientifically study their conditions and needs in order to determine what method should be followed to produce the best results. When this is done, and these methods enforced, the desired results are sure to follow.

In many mills the great variation in quality is the cause for wonder, worry and poor results. On the other hand, it is possible to remove or prevent the troubles due to this variation by applying and adhering to improved methods during the cooking process, as there is always a reason for every result obtained whether it be good or poor. The washing, handling and scouring of sulphite is usually considered a purely mechanical proposition and in a large measure this is true, but even here the scientific study of conditions and needs and application of improved methods will almost invariably demonstrate their value in the savings in power, labor and increased efficiency, and its general adoption will be the means, and I may say is the only means of successfully solving the many perplexing problems which are constantly coming up during the double process of the manufacture of sulphite pulp.

SCANDINAVIAN PULP MILLSTONES.

The United States Government has received from its Consuls located at various points in Scandinavia some interesting particulars of the pulp stones in general use in Norway and Sweden. From their reports the following abstract is made:

The size of the stone most used in modern Norwegian pulp mills is 27 inches in thickness and 56 inches in diameter, with a 9-inch hole in the centre. These stones are generally imported from Great Britain, being made of English sandstone. Suitable material for grindstones and for millstones is found in different parts of Norway, but it is not gritty enough for pulp stones.

The average life of a pulp stone, as above described, is five to ten months, and the price $63 c. i. f. nearest seaport. Three hundred horse-power is required per stone, and the pressure on the grinder cylinders is about 45 pounds per square inch. Three cylinders are used on each stone; each cylinder has one pocket with an inside diameter of 14 inches. The speed of the line shaft is 200 revolutions per minute.

Adequate direct steamship facilities between this part of Norway and the United States are provided by the Scandinavian-American Line, running regularly between Christiania and New York, Boston, Philadelphia and Baltimore, and the Norway-Mexico Gulf Line between Christiania and Newport News, Galveston and New Orleans.

Pulp stones used in Sweden for grinding mechanical wood pulp are nearly always 27 inches thick and 54 inches in diameter. They are, for the greater part, imported from England, but some are also bought from Germany, the price being about 68 cents per cubic foot.

The average life of a stone may be said to be one and one-half years, but sometimes stones may be fit for three or four years. There is always a great risk of breakage, especially when delivered in the winter through the freezing of the moisture in the stones. In order to avoid this the stones are often kept for one or two years in a dry place so as to be perfectly dry before being used. The horse-power used per stone ranges between 300 and 500, and the water pressure on the grinders is 60 to 90 pounds. The diameter of the cylinders is 10, 12 or 14 inches, each cylinder having three pockets. The line shaft is run at a speed of 220 to 230 revolutions per minute.

There are no direct steamship lines between the United States and Sweden. The best freight facilities are offered by the Scandinavian-American Line via Copenhagen. There is some talk of establishing direct communications between Gottenborg and New York, but as yet nothing has been done in the matter. Steamers also ply between Gottenborg and Newport News.

At a mill near Bergen the stones used for grinding the pulp are 32¾ inches thick and 55 inches in diameter. They are imported from England and Germany, the prices paid being almost identical. The English stones cost $84.40 c. i. f. Bergen, the German $84.40 to $85.75. The average horse-power required per stone is 275, the water pressure on the grinder cylinders is 40 to 50 pounds, and the speed of the line shaft is 180 revolutions per minute. The cylinders are 12 inches, and have three pockets.

In reply to an inquiry as to a possible market here for American grindstones, the manager of the Sevareid Karton and Papfabrik stated that the attention of mill owners at the present time was directed to an artificial grindstone invented in Germany, which promised to be much superior to those now in use. The alleged advantages possessed by the new invention are that it

is evenly tempered throughout, that it wears and grinds evenly and uniformly, and that it is practically unbreakable.

The hard, coarse grindstones used in the manufacture of mechanical wood pulp in the Gottenborg consular district are of two classes, so far as dimensions are concerned. Those used in the older mills are generally 72 (English) inches in diameter and 22 or 26 inches in thickness; those employed by the newer plants are 54 inches in diameter and 27 to 43 inches thick. The most common size in the first class is 22 x 72 inches and in the second class 27 x 54 inches. The 43 x 54 inch size is rare in this part of Sweden.

There is a small production of such stones in Sweden, but the supply comes almost entirely from Saxony and England. Stones of the sizes used by the older type of mills sell for $67 to $93.80; stones 27 x 54 inches cost $67; those 43 x 54 bring $160.80 to $187.60. All of these prices are duty paid and f. o. b. Gottenborg. The stones used by the older type of mills last eight to ten months; the latter type have a life of eight to twelve months.

The horse-power per stone of 72 inches diameter is 150 if 22 inches thick and 350 if 26 inches thick; 400 horse-power is the figure for stones 27 x 54 and 800 to 1,000 for those 43 x 54. The water pressure on the grinder cylinders in both classes of mills will run from 60 to 100 pounds per square inch. The cylinders in the older type of mill are 6 to 8 inches in diameter and those in the newer type are 12 to 14 inches. The older type of mill ordinarily has eight pockets to each pulp grinder, the newer type two or three. The line shaft speed in the older plants is 120 to 150 revolutions per minute, in the new plants 200 to 250.

"As to opportunities for trade in these grindstones, there are about 160 wood pulp establishments (chemical and mechanical) in Sweden, employing 12,000 men and with an annual production aggregating $20,000,000. Of these eighty-four plants, employing over 5,000 men and with an annual output valued at $4,500,000, are in the Gottenborg consular district, which, roughly speaking, includes the whole of southwestern Sweden.

The production of mechanical pulp, with which we are most concerned in connection with the grindstone business, constitutes in quantity about 38 per cent. and in value about 20 per cent. of the total production of the whole of Sweden. In this consular district the proportion of mechanical pulp is considerably higher. In 1909 there were 350 pulp grinding mills in Sweden, as compared with 336 in the preceding year. The producing of mechanical wood pulp in 1909 (latest available official figures) was 50,713 tons of dry pulp and 314,515 tons of wet, as compared with 54,470 tons and 140,602 tons, respectively, in 1900. The share of this consular district in the production for 1909 was 26,766 tons of dry and 146,494 tons of wet. Eighty per cent. of the dry and 60 per cent. of the wet pulp from this district were produced in one county of Varmland.

While the production of wood pulp in general is moving northward, to be nearer the supplies of raw material, the production of wet mechanical pulp, on account of the cost of transportation of the finished product, continues to centre more in the south. As will be seen from the figures given above, the production of dry mechanical pulp is of comparatively small importance. Varmland County produces more dry mechanical pulp than any other single county in Sweden, 40 per cent. of the country's total, and the same is true of the production of wet mechanical, of which 21 per cent. comes from Varmland. Alfsborg County, also in this district, is next in importance so far as mechanical pulp is concerned.

ACTION OF LIME ON SULPHATE PULP WASTE LYE.

If sulphite waste lye be treated with milk of lye until neutralized, a precipitate is formed containing calcium sulphate, calcium sulphite and calcium salts of organic acids. If more lime be added, the precipitate is increased and the liquid assumes a yellowish color. On filtering the liquid and adding a further quantity of lime, it is found that a considerable portion of the latter is dissolved. If the yellow be then heated, or if more milk of lime be added, a large quantity of a yellow precipitate is suddenly produced and the entire mass forms a thick paste. The liquid portion can be separated by filtration and the precipitate then appears to be composed of very small crystals of the calcium salts or salts of one or several very similar organic compounds. The moist precipitate readily dissolves when acidified with sulphuric acid; when it is decomposed, calcium sulphate separates out and a yellow or brown solution remains. If this be poured slowly into sulphuric acid of 30 degrees Be., while stirring, each drop congeals at once to a flaky gray mass, so that a large quantity of an organic substance is obtained, which can be filtered off from the excess of acid. This organic substance when oxidized by nitric acid yields quantities of crystals of oxalic acid.

PEAT AND WOOD WASTE FOR PULP.

Wilhelm Hellwig, a German paper maker, and F. Hermann, manufacturer, have been granted a patent (G. B.) for an approved process for rendering peat, wood waste and other vegetable substances suitable for manufacturing paper pulp. The material is placed in a warm solution of chloride of lime, dilute hydrochloric acid, and potash or soda, and allowed to remain for some time. After this the mass is boiled in lime water. One example is: 10 kilograms of 90 per cent. calcined soda dissolved in 100 litres boiling water, is boiled for a time, stirring at intervals. Two kilograms of chloride of lime are added in the form of paste. When the mixture is cool there is added 3 kilograms of hydrochloride acid of about 20 degrees Be. Material placed in this liquor is left for twenty-four hours (the liquor being, preferably, warmed). The material is then removed and put into boiling water into which has been introduced 5 per cent. of burned lime. In this the material is boiled for about two hours, after which it is removed, and washed in clean cold water. The resulting mass is ready for further treatment in the ordinary way.

USE OF WASTE WOOD.

Grind into pulp, with the aid of a cheap grinder, or the installation of a grinding box, as near as possible to the upper edge of the stone, which can be filled with the waste. The so-called "sauer-kraut" can be reduced in a suitable fibre machine to coarse wood pulp, which after passing through the refiner can be used for making paper and pasteboard. The "sauer-kraut" can also be reduced to fibre in the edge mill, but the result is disproportionately small, compared with the expenditure of power and time. In warm weather, with suitable wind, the refuse may be dried for use as fuel under the boilers, and must be spread about to insure the proper drying.

FORESTRY AND PULPWOOD

CONSERVATION OF CANADA'S FORESTS.

By Jas. Lawler, Secy. of Canadian Forestry Ass'n.

Forestry may be described as the art of growing trees for the use of man. In every country large areas will grow nothing else, profitably, but trees, and the aim of the forest engineer is to have those areas so handled as to perpetually produce crops of the timber most useful to man. He does not ask or expect one acre of arable land.

Forestry is important to Canada. The Dominion Forestry Branch estimates the value of our annual forest production at $166,000,000. In the first forty years of Confederation the value of our exports of forest products was one-third greater than the value of our exports of farm products. Two-thirds of Canada is fit only to grow trees—trees producing the finest structural timber in the world. The keeping of these forest areas covered with tree growth will not only mean a constant and increasing revenue from timber, but will protect our rivers, waterpowers and navigation, and maintain a game and health resort of the finest kind. Maine gets $15,000,000 per year from the tourists who come to her from other States, and her forests are insignificant in comparison with those of Canada.

What is Canada doing to secure these advantages? Absolutely, very little; relatively, compared with a few years ago, very much. As eminent men have pointed out most of the work in forestry on this continent has been done in very recent years.

Look back a few years in Canada. Conservation was an unknown word. There was no idea of its need or possibility. The public conscience was not aroused as to the criminality of carelessness in handling fire in the woods. Fines or imprisonment for such acts were not to be thought of. Settlement was allowed, even encouraged, in districts wholly unsuited to farming, as witness hundreds of abandoned farms all over Eastern Canada, and thousands more that will eventually be returned to timber. The idea that the sawmill and the lumberman should forever be factors in Canada's life, not a passing phase, had not yet dawned.

Contrast that with the present state of things in 1912. The Governments of Canada, Federal and Provincial spent about one million dollars on the forests, chiefly for fire protection, and the lumbermen and the railways—popularly supposed to be the forest's prime evils—about half a million dollars more. During the past season between 1,800 and 2,000 fire rangers have been patrolling our forests, and this number will be greatly increased in 1913. In addition to what Governments are doing timber-owners are cutting trails and erecting telephone lines through their limits. Some are experimenting in reforestation. The Dominion Forestry Branch in one part of its work, has in the past ten years given out twenty million trees to prairie settlers. The Governments of Ontario and Quebec have begun the reforesting of abandoned farms. The Canadian Pacific Railway has converted all its locomotives from Field to Vancouver to oil-burners to protect the forest. This company has planted, for various purposes, millions of trees itself and is now offering $2,400 to encourage prairie farmers to do so. A number of forest engineers have been sent out by the University of Toronto and other universities. This means that technical men are now available and also that the profession will soon be as well recognized as that of civil or mining engineer. Above all, public opinion, as evidenced by discussion in the press and in Parliament, and by the work of organizations like the Commission of Conservation and the Canadian Forestry Association, is being aroused.

This seems a long list and yet we have only begun. As indicated, nearly every dollar is being spent for protection of the old crop, scarcely anything for developing the young growth. This is not a simple question. It involves forest land tenure, forest policy, the separation of arable from forest land by accurate surveys and the keeping of squatters or settlers out of the latter, and above all the investment of large sums of money for long periods in order to grow these long-time crops and bring them to market with ever-increasing profit. Canada's expenditure on forest development is less than half a cent per acre. In British India it is 6 cents, in France 9 cents, and in Prussia $1.90 per acre. And these countries, where money is as "tight" as it is in Canada, are making money from their forests in proportion to their investments.

We need badly a forest products laboratory to test our different woods, point out their uses, methods of handling, and how they may be treated to last longer in use, and to give this information to home and foreign wood-users.

Canada, in forestry, is a giant waking, but not yet working.

FORESTRY WORK IN ONTARIO.

In 1906, E. J. Zavitz began a forestry campaign in Ontario. His work consisted of an educational propaganda with a view of arousing interest in reafforesting and in getting small demonstration plots of trees set out on waste land throughout the Province. The first plantings were made in Durham and Norfolk counties and some of the trees then set out are man-high now.

Since then the work has steadily expanded until last year when some 375,000 trees—mostly Scotch and white pine—were planted in various parts of the Province. All told, something like a million and a half trees have been started growing in the six years, the work covering nearly 30 counties extending from Cornwall in the east to Essex in the west and to Manitoulin in the north.

The trees for planting are supplied free of cost from the Provincial nursery in Norfolk. Any farmer who will undertake to set out a block according to directions may secure a supply. There are comparatively few farms on which there is not at least a little broken land which is better adapted to the growing of timber than anything else. There are thousands of farms on which the growth of timber is a vital necessity, either for the holding of sand hills or the protection of streams. It would be an excellent thing if a thousand farmers, possessing such locations, could be induced to start a plantation next spring. It would be still better if township councils could be induced to take the work up in a systematic way and to secure such areas as the sand plains north of Barrie for the growth of municipal forests. The work of planting is not arduous. If furrows are first run a man and two smart lads can plant at the rate of 200 trees per hour.

MONTREAL PULP AND PAPER MATTERS.

Montreal, Jan. 14th, 1913.

The one topic of conversation among pulp and paper men in this province is in connection with the latest action of Sir Lomer Gouin in removing the embargo from paper manufactured from pulp wood cut from Crown lands. Like all acts by a Government, this latest act is alternately praised and condemned by paper men. The parties who have been directly affected by the Government's change of policy are loud in their praises of Sir Lomer Gouin, and declare that the province will greatly benefit from his action. However, many pulp and paper men criticize the Government, and declare that the four companies which have received these special favors are no more entitled to special legislation than are the rest of them. In brief, the paper men in the province are divided into two camps over the matter.

In conversation with a number of paper men, the following views were expressed. One prominent manufacturer, who is in close touch with the industry both in Canada and the United States, said:

"It is not very clear what Sir Lomer Gouin intends doing about the other interested parties, and until he makes some announcement, it would be unfair to criticize. I might say, however, that I am at a loss to understand why he did this, as it is contrary to the programme which he mapped out some two or three years ago. You will also remember that at the time the reciprocity negotiations were pending, he refused to open up the question or be a party to any reciprocal measures in so far as this province was concerned. It has been said that he was influenced by the action of the British Columbia Government, which granted special favors to the Powell River Pulp & Lumber Company, but this example has been before him for some time, and it is inconceivable to think that he was suddenly influenced by the action of the British Columbia Government. The legislation is bound to cause a good deal of jealousy and ill-feeling among paper-makers, as it discriminates against some of the United States holders of limits. While it is believed that Sir Lomer Gouin only gave this concession to companies making paper in the province, there are a number of other companies which in a sense should be included in this special legislation. Some of the four companies make other products besides paper, and yet companies such as the Union Bag, International Paper Company, etc., who make ground wood and kraft paper, are not included in the favored list. I do not see how the Government can make 'flesh of one and fish of another' and avoid criticism. I am under the impression, however, that if others appeal for it, they may have similar concessions granted to them.

"Sir Lomer Gouin has been extremely fair to the business interests of this province, and has acted throughout with the very best judgment, and undoubtedly has had some good reasons for doing what he has done. One point I do not like is that it will be hailed by the Americans as a sign of weakness, and will lead to similar agitations in Ontario, New Brunswick and other places. Another point is that this action was taken at a time when the Democratic party were making alterations in the tariff. To me it would have looked the part of wisdom to have waited and seen what action the United States Government would take before doing anything ourselves. As it is now, there will probably be a revision of schedule 2. In brief, it looks as if the Government's action was the result of pressure brought to bear upon them by interests who considered their own personal gains and did not fully consider the interests of the whole province. I am also firmly convinced that a good deal of jealousy and bitterness will be felt by companies which have not been so favored. As long as every company was treated alike, none of them could complain. Now that four have received special favors, the remainder are likely to complain bitterly. However, Sir Lomer Gouin may have explanations which will clear up the situation somewhat. Until these are made, it is only fair that severe criticism be withheld."

Mr. J. N. Greenshields, head of the Wayagamack Company, one of those favored by the special legislation, is strongly of the opinion that the change of policy will immeasurably benefit the paper manufacturers in this province. "It means that we will get our paper into the United States duty free, and by avoiding this handicap of $5.75 per ton there will be just that much more profit. It will be a great stimulus to the industry."

Mr. William Price, head of Price Bros., Limited, another of the favored companies, is of the opinion that it will increase the amount of money left in the province by paper men by at least $1,000,000 per year. "The removal of the duty will prove a big factor in the manufacture of paper. The companies affected by the legislation will greatly benefit, and the result will be that the industry will make great strides."

Sir William Van Horne's Grand Falls Company, in New Brunswick, will commence the erection of their pulp and paper mills in the early spring. The cost of erecting these plants and also the power plant, which the company are planning to install, will cost in the neighborhood of $3,000,000. The pulp and paper plant will be built in two units, and when completed will give employment to 2,500 men. The last formalities in connection with the deposit of $60,000 with the Provincial Government for the site have just been completed and the agreement signed, the plans approved of and everything made ready for the commencement of the work in the early spring.

The Laurentide Company recently purchased valuable water rights on the St. Maurice river from the Canada Iron Corporation. These water powers will enable the Laurentide Company to develop 80,000 h.p., sufficient to enable them to dispose of a large amount for commercial purposes.

Mr. A. Lamont, of the Transportation Building, Montreal, has sold 116 square miles of spruce forest suitable for pulp wood on the southwest coast of Labrador to a syndicate of London, England, capitalists. The amount involved in the transaction, it is understood, was between $200,000 and $300,000.

The Honorable S. N. Parent, Chairman of the Quebec Waterways Commission, which has recently had its name changed to the Quebec Streams Commission, and has been invested with the powers of a corporation, in order to carry out its scheme of constructing a large storage reservoir on the upper St. Maurice, for the purpose of regulating the flow of that river for generating electricity, is in Quebec in connection with this work. The area of the proposed reservoir will be more than 300 square miles, and the amount of water to be stored will be about 160 billion cubic feet. It will drain a basin of more than sixteen thousand square miles in area, and give a regular flow of 18,000 cubic feet per second in Shawinigan and other places.

Lumbermen throughout the province are anxious for snow and cold weather. Up to the present time the winter has been so mild and the snowfalls so slight, that lumbering operations have been seriously delayed. Unless colder weather sets in and more snow falls, the

cut of lumber this year will be considerably less than it was a year ago.

The South Shore Paper Company, of Montreal, recently incorporated with a capital of $4,000,000, will, it is said, shortly be commencing building operations at Drummondville, Que. It is said that Mr. O'Brien, the Cobalt millionaire, is behind this company, and that they will develop water power at Drummondville and establish a ground wood pulp mill. They claim to have an abundant supply of water and sufficient wood to keep them going for a great many years.

J. C. R.

OTTAWA PULP AND PAPER MATTERS.

Ottawa, Ont., January 14.

The recent snowfall, coming after a month of unseasonably mild weather, was hailed with joy by lumbermen in the Ottawa Valley. On account of the absence of snow and ice on the ground, the logs could not be got out of the woods and were piled in heaps all over the limits awaiting hauling to the rivers. As a result, a number of firms cutting pulp wood and other varieties of lumber have been losing money. A scarcity of horses, too, is somewhat retarding work in the limits, lumbermen's agents reporting that in many cases they have been able to fill only half of their orders.

The Dominion Railway Commission has entered into a co-operative arrangement with Quebec Province with regard to the prevention of fire along railway lines. Such arrangements exist between the Commission and the Western Provinces, and will shortly be extended to Ontario, it is understood. For the control of the fire situation along lines having Dominion charters, the new agreement provides for the establishment of special patrols by the railway companies ,the reporting and extinguishing of fires by railway employees and the regulation of the burning of inflammable material along rights-of-way during the fire season.

Of great interest to pulp and paper men is a report on two of the great northern rivers of Canada just made to the Conservation Commission by its hydro-electric engineer, Mr. L. G. Dennis, who will shortly issue a report on the Western Water Powers of Canada. Mr. Dennis states that the raw material for the pulp and lumber industries lies so close at hand to the Slave and Peace Rivers, the two of which he speaks, as to make the development of their power of great importance. The volume of water in the Fort Smith rapids of the Slave River is so great as to afford a total power available during the navigation season, May to November, of 1,000,000 horse power. The total minimum power available during the open season from the Peace River Mr. Dennis estimates at 400,000 H. P. Its development for water power purposes, he states, would involve some intricate problems, but to compensate for this its situation near the raw material for pulp and lumber industries must be considered.

Among the trade inquiries in the latest bulletin of the Trade and Commerce Department is one from an United States firm which desires to obtain supplies of wrapping, bag, news, writing and toilet paper, and is willing to place large contracts. Another is from a Barbadoes commission merchant, who invites correspondence from Canadian paper manufacturers.

Prominent pulp and paper men of Ottawa have figured largely in the recent municipal election campaign as a result of which Mr. J. A. Ellis, M.L.A., formerly Secretary of the Municipal Electric Department, has been elected Mayor of Ottawa. It was through the suggestion of Mr. J. R. Booth that Mr. Ellis was persuaded to come out into the field for the Mayoralty. Mr. Booth, with whom was associated Senator W. C. Edwards, of the lumber company of that name, claimed that Mr. Ellis was the man who was needed to straighten out civic affairs from the mess they had resolved themselves into, and as the largest ratepayer in the city his opinion naturally had a good deal of authority.

An order issued recently by the Department of Customs forbade the importation from the New England States ofall kinds of trees with the bark on. The object of the prohibition is to prevent the spreading into this country of the gypsy moth. If an order from the New England forestry authorities is attached to the trees stating there is no danger of moths, however, they will be allowed in.

The Beaver Board Co., recently established at Beaverdale, outside of Hull, Que., expects to commence operations, it is announced, in March.

The saw mills and timber and pulp wood limits at Opeongo, Ont., formerly owned by Cameron & Co., of Ottawa, have been bought by the Dennis Canadian Co., of Whitney, Ont.

Of great interest to shippers of pulp and paper was a statement put in at the re-opening of the Western freight rates inquiry before the Dominion Railway Commission last week in regard to the discrimination which exists in railway rates on news print to Western points as compared with those nearer east. At a former session of the inquiry the C.P.R. put in exhibits to prove that among other commodities, rates on pulp and paper were lower on Canadian railroads than on United States lines for the same distances, and especially with regard to longer distances.

At this latest session, however, Mr. M. K. Cowan, K.C., counsel for Saskatchewan and Alberta, filed an exhibit which showed the rates of the C.P.R. on news print, carloads, all rail, from Shawinigan Falls, Que., to various C.P.R. stations west of Port Arthur. It indicated that whereas the rate per ton per mile (the average rate) from Shawinigan Falls to Winnipeg, was only .794, the rate to Edmonton, Alta., almost twice the distance, was 1.024. According to the usual principles of rate making, the longer the shipment the lower the mileage rate, or otherwise long shipments would be prohibitive. With regard to news print moving West, however, this principle does not obtain; in other words, discrimination exists against points west of Winnipeg, as compared with points east of it, as regards shipments from eastern centres.

This incongruity was explained by the C.P.R. to be due to the fact that the rate to Winnipeg had been lowered to meet Wisconsin competition. Mr. Cowan's exhibit showed the following rates per ton per mile from Shawinigan Falls to different Western points: To Winnipeg, .794 cents; to Regina, Sask., 1.016; to Moose Jaw, Sask., 1.074; to Saskatoon, Sask., 1,101; to Medicine Hat, Alta., 1.121; to Lethbridge, Alta., 1.115; to Calgary, Alta., 1.112; to Edmonton, Alta., 1.024. From this it will be seen that Medicine Hat, Alta., although 2,193 miles from Shawinigan Falls, as compared with Winnipeg's 1,536, or Regina's 1,894, has to pay a greater mileage rate.

—"Mac."

BULKY PAPER.

By P. Ebbinghaus.

Specially Translated for Pulp and Paper Magazine.

Bulky paper in considerable quantities is used especially for the printing of engravings. In the following are given some technical indications as to the manufacture of those thick and light papers, generally known as "featherweight" papers. The principal properties of these papers are, as indicated by their name, their thickness and lightness, and, besides, they must of course easily take the ink.

There are two main kinds of bulky papers: one made from rags, and one from cellulose. For the first grade the following mixture may be used:

	Per cent.
Light bleached cotton rags, digested with lime for 6 hours, under a pressure of 45 lbs.	50
Bleached cotton waste spinnings, digested with 20 per cent. of lime and 1 per cent. of caustic soda for 10 hours, under a pressure of 75 lb.	20
White paper refuse without ground wood pulp, refined in a Furster apparatus	20
Refuse, size. No fillers	10

Indanthren Patent in paste, and red for cotton from Badische, Anilin & Sodafabrik are used to obtain the right tinge.

The beater knives ought to be sharp. Speed of the cylinder 120 r.p.m. The beating and washing should not be hastened. A size, rich in free rosin, preferably prepared with Arledters emulsifier should be used.

The kind of featherweight paper most called for is made from cellulose. The best grade is composed thus:

	Per cent.
Light, bleached cotton rags, as above	20
Poplar cellulose, bleached by electricity	30
Pine cellulose, Ritter-Kellner, bleached by electricity	20
Bleached alpha	20
Refuse, size. No mineral loading	10

Colors: Cyananthrol RB Patent; Bordeaux new P; from Badische Co.

The cotton rags are ¾ ground and then added to the cellulose. The alpha is often substituted by refuse paper, free from ground wood pulp.

The following remarks refer to the treatment in the and on the paper machine and apply to both grades:

Refining.—The refiner ought to have rather sharp knives, preferably of bronze. Since some time, however, a combination of steel and bronze is used. The outside knives in each group are of steel and the other of bronze, both the rotary and the stationary.

It is, however, better to have all knives of bronze, but the outside knives must then be double as thick as the inside ones. This saves the fibres and the knives themselves. The quality will be improved, if the pulp is passed through a conical refiner.

Paper Machine.—It is very favorable to use agitators before the pulp arrives on the wires, especially of spiral form. The suction boxes should only have a weak suction, but there should be many of them. Millspaugh's suction boxes are not suitable for this specialty. The wet-presses and couch rolls should give as little pressure as possible, and the first dryers should not be very warm. The shaking of the wire should be very strong and the wire horizontal with preferably a small inclination towards the presses. A light dandy-roll should be used and the machine run slowly.—La Papeterie.

BLEACHING GROUND WOOD PULP.

By bleaching mechanical wood pulp, not only is the whiteness of the pulp improved, but the formation of fungi during storage is prevented. As a bleaching agent only sodium bisulphite has proved satisfactory. The pulp saturated with it becomes whiter for about a fortnight, then retains its degree of whiteness for a time and afterwards becomes slowly somewhat greyer. When the demand is small it suffices to brush each board uniformly with a brush dipped into bisulphite solution, to tie them together and to pile the packets thus obtained in heaps.

The workman must so regulate the quantity of the bisulphite by trial that he uses two and a half gallons of bisulphite per ton of pulp. When the demand for bleached pulp is larger a wooden box lined with sheet lead is arranged over the board-machine, the lead lining hanging over on one side. A strip of felt 16 inches broad is placed in the channel; the one the longitudinal side of the strip of felt is cut notched and this side is allowed to hang about 4 inches over the lip of lead. Now, if bisuplhite solution diluted in the ratio 1.3 is poured into the tank the solution drops uniformly on to the wood pulp. The size rolls of the board machine should not be of iron, but of wood or copper. In order to increase the quantity of the bisulphite which is to drop, the strip of felt may be allowed to hang rather further out of the tank, or a second or third strip may be employed, or the bisulphite solution may be used concentrated.

In order to accelerate bleaching, behind the tank just described a second may be arranged which allows dilute sulphuric acid to drop on to the pulp. The consumption of sulphuric acid must be so regulated that 48 ozs. to 64 ozs. (concentrated) are used per ton wet mechanical wood pulp. Bleached pulp is then obtained after two days; it is disadvantageous that an annoying odor of sulphurous acid is produced, that the process is rather expensive, and that sulphuric acid must be handled carefully. Sulphuric acid is, therefore, employed only when it is wished to obtain bleached pulp very quickly.

YIELD OF PULP FROM PINE.

The question was asked in the Zentralblatt as to how much dry pulp ought to be yielded by a cubic metre of pine wood. H. Postl, of Nurnberg, says that the cubic metre weighs on the average 862 kg. fresh cut, and 469 kg. quite dry, and should give 340 kg. of white or 300 kg. of brown pulp. Jenensus puts the yield at from 300 to 350 kg. Still higher figures, 400 kg. and upward, are given by E. N. and Schleiferei praxis; but it is clear that much must depend on the nature of the wood and whether it is ground coarse or fine, i.e., what amount of waste in grinding. Nevertheless, the above data may perhaps be useful. They show at least that the absolutely dry wood contains an overwhelming percentage of cellulose.

Special attention is called to the advertisement on page 73 of pulpwood limits for sale in the Province of Quebec. Large tracts in good accessible localities are rare nowadays, and this one may appeal to one or another of our large pulp and paper manufacturing concerns.

PULP AND PAPER NEWS

The Riordon Paper Co. declared a quarterly dividend of 1¾ per cent. on its preferred stock.

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The New Ontario Colonization Co. will erect a ground wood mill in northern Ontario next summer.

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J. Hanbury & Co. have recently incorporated in Vancouver, B.C., with $1,200,000 capital to erect a paper mill.

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The business of the Pullan Paper Stock Co., in Winnipeg, will in future be carried on in the name of J. Pullan.

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The Rolland Paper Co. has purchased premises on St. Paul Street, Montreal, on which they propose to erect a new warehouse.

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The Northern Island Pulp Wood Co. is negotiating with Port Arthur City Council for the establishment of a pulp and paper mill to cost $750,000.

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The Rainy Lake Pulp Wood Co. has been organized at Fort Frances, Ont., for the purpose of buying pulp wood and timber of all kinds direct from the settlers.

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Two large 186-inch paper machines are now being built by the Bagley Sewall Company, of Watertown, N.Y., for the Fort Frances Paper Company, Fort Frances.

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According to latest report, the first pulp mill to be operated in Canada by natural gas will be at Athabasca Landing. The country is said to be well stocked with pulp wood.

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Mr. Sweezey, Forest Engineer, Quebec, has recently returned from an extended tour in the West, where his investigations brought him as far north as th Peace River and other parts of Alberta.

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The Valley Lumber Co., Red Deer, Alta., has been reorganized with Hon. W. H. Cushing, M.P., as president. Valuable timber limits, largely spruce, have been acquired, and a new mill will be built.

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The question whether certain European nations under the favored nations treaties are entitled to free entry into the United States for their pulp and paper came up for argument beginning 13th inst.

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The Alberta and Saskatchewan Straw Paper Products, Ltd., are building plants at Calgary, Moose Jaw, and Medicine Hat. These are the interests of Mr. J. A. Barton and C. F. Schaus, referred to in last issue.

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Mr. M. J. O'Brien, Renfrew, Ont., who has recently been considering building a new mill in Haileybury, Ont., is now in the market to sell his timber and pulp limits in that vicinity rather than to build a mill.

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The Abitibi Pulp & Paper Mills, Ltd., expects to have a 100-ton ground wood mill in operation at Iroquois Falls, Ont., within a year. The proposed newsprint mill, however, is scarcely likely to be built for some years.

Large quantities of pulp wood are being shipped from Anticosti Island. The steamer "Thyra Menier" recently took 805 cords for the International Paper Co. The "Norhilda" also took a load of over 700 cords to Portland, Me.

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Mr. J. R. Bristol, late Dominion appraiser at Ottawa, has been appointed manager of the tariff branch of the Canadian Manufacturers' Association, in succession to Mr. R. W. Breadner, who has re-entered the Customs Department.

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The Peale-Coryell Lumber Co., 200 Fifth Avenue, New York, have recently purchased the Paton lumber limits on the Gaspe coast. During next summer a large sulphite plant will be erected; meantime they are in the market to sell rossed woods.

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Mr. John R. Barber, the veteran paper manufacturer, has, we are glad to hear, improved considerably in health during the last month. His son, Capt. R. R., late manager of the Canada Coating Mills, Georgetown, has gone on a prolonged trip to Southern Europe.

* * * *

The Cedar Rapids Power Co., Montreal, has been granted authority to increase its capital from $10,000,000 to $15,000,000. The step is regarded as having some connection with the talked-of closer union of interests between Montreal Power, Shawinigan and the first-named company.

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It is said that the Ontario Paper Co., Thorold, has contracted for a supply of pulp wood for the next two years from Henri Menier, of Anticosti Island. The company's newsprint mill is expected to begin operations next May. Warren Curtis, Jr., is superintending erection of machinery.

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The Stadacona Hydraulic Co. expects to have the development of Seven Falls, near Quebec City, completed ready for supply of power by July next. The 70 ft. dam is already complete. We understand that the Bayless Pulp & Paper Co. will take 4,000 h.p., and the remaining 5,000 h.p. will be taken by other enterprises.

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We understand that Mr. A. E. Millington, formerly general manager of the Spanish River Pulp & Paper Co., has been made Western manager of the Ocean Falls, B.C., lumber and pulp mills. This company is to be reorganized. Mr. A. B. Martin, the resident manager, will retain that position. Mr. Hamilton Benn, of London, Eng., is at the head of a syndicate which is taking the enterprise over.

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The Beaver Board Co.'s large new factory near Ottawa is approaching completion, and manufacturing is expected to begin early in March. The factory is 70 by 500 ft. with a power house 40 by 80 ft. The output contemplated is 250,000 square ft. of beaver board daily. A model settlement will be built up for the company's workmen. The company has been for the past few months carrying on operations at J. R. Booth's mill.

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We are glad to be informed by the Dryden Timber & Power Co., Ltd., Dryden, Ont., that the recent fire at their premises was not nearly so serious as at first reported. In fact, it was confined to some wooden form work erected for the construction of reinforced concrete work in connection with the power house, and the entire loss was only about $2,000. The fire did not seriously delay the company, who expect to begin operations at the new mill early next month.

Mr. J. A. De Cew, chemical engineer of Montreal, has just been appointed consulting chemist for the Lake Superior Paper Co., Sault Ste. Marie. We congratulate this company on its broad policy of mill operation on a scientific basis, which cannot but give enormous financial results in the operations of any plant. The Lake Superior Paper Co. has always been among the foremost in this regard. Their third machine ran on an Xmas present sheet. The fourth 186-inch machine will operate during this month.

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The News Pulp & Paper Co., of St. Raymond, Que., has completed a very prosperous season, in spite of the spring loss of $10,000 worth of logs. They are seriously thinking of further extensions to their plant.

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We regret to learn of the death of Dr. Adolph Pharr, the organizer and head of the paper makers' department of the Technische Hochschule at Darmstadt, Germany. On December 11th, which was his 61st birthday, he lectured and attended to his usual duties, but during the following night was seized with heart failure resulting in his unexpected and lamented death. Dr. Pharr was well known among the paper makers of Germany and was a valued contributor to trade journals. He was also the author of a standard work on turbine water wheels.

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The East Canada Power and Pulp Co., Murray Bay, Que., now in liquidation, showed total liabilities in its first annual statement to be $3,185,057, of which $3,000,000 were capital stock and bonds. Current liabilities included accounts payable, $73,664; bills payable, $30,662; accrued wages, $4,778, bond interest outstanding, $652; bond interest accrued on $1,500,000 for 4 months at 6 per cent., $30,000; bank loan, $45,299, making a total of $185,057 current liabilities. Assets totalled $3,271,439, including $3,002,751 for timber limits, river improvements, etc., and stock and bonds in other companies $78,053, making a total of $3,080,804. Current assets totalling $190,634 included bills receivable, $35,096; cash, $85,013; stock, logs and pulp wood, $66,228. The profit and loss account showed a surplus of $86,382, made from operations on lumber. It had been calculated to turn out 120 tons of pulp per day, but difficulties with the water supply prevented this, and profits were consequently much smaller than anticipated with the result that the bond interest could not be met.

NEW INCORPORATIONS

Crossing Lumber Co., Minaki, Ont.; capital $200,000. To manufacture lumber and pulp. A. Stewart, H. R. Patriarche, D. H. Cooper, all of Winnipeg.

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Middle West Lumber Co., Ltd., Vancouver; capital $100,000. To do business as foresters, timber merchants, manufacturers of wood pulp, make and deal in paper and products of the same.

* * * *

Trent Mfg. Co., Trenton, Ont.; capital $40,000. To manufacture egg fillers, egg cartons, milk bottles, drinking cups and pails, etc. It will take over the plant of the Trent Mfg. Co.

* * * *

Abitibi Pulp & Paper Co., Ltd., incorporated under Dominion laws, has been authorized to do business in the Province of Ontario, provided it does not use a sum larger than $1,750,000.

* * * *

Garnet Creek and Seymour River Lumber Co., Toronto; capital $250,000. To purchase timber limits, deal in all kinds of wood, buy and sell pulp and paper, etc. H. L. Symes, C. J. Ballantine, Toronto.

* * * *

Quatsino Timber Co., Ltd., Victoria, B.C., capital $75,000. To purchase timber licenses, build saw mills, carry on business as foresters, dealers in and manufacturers of wood pulp, paper, card board, mill board, etc.

* * * *

The Brantford Courier, Ltd., Brantford, Ont.; capital $100,000. To take over the printing and publishing business of Reville Bros., in Brantford, and to acquire and publish newspapers, do business as printers, lithographers, engravers, etc.

* * * *

R. J. Dowd Knife Works, Beloit, Wis., is licensed to carry on business in British Columbia; capital $50,000. They are manufacturers of all kinds of machine knives, tools, etc. Mackenzie Matheson, barrister, Vancouver, is the company's attorney.

* * * *

Canadian Barker Co., Ltd., Sault Ste. Marie, Ont.; capital $40,000. To manufacture and sell wood working, paper making and other machinery, particularly pulp wood barkers on the line of the inventions of Alex. Roberts, A. Libert, and F. Libert. Provisional directors, E. H. Manger, H. B. Cleereman, and S. H. Cady, of Green Bay, Wis.

FORESTS MORE BENEFICIAL THAN SHEEP FARMS.

A very interesting question in regard to the relative value of forests and sheep grazing was raised in the evidence taken a few years ago by a committee of the British Board of Agriculture to inquire into British forestry. The increase in population makes the question of its future support one of vital importance, and the relative value of the different uses of land in their ability to support population is a valuable index as to the direction in which development of the use of land should be directed.

From the evidence of several witnesses and that obtained at previous investigations it was determined that it took from one to six acres of the land usually employed for sheep grazing in Scotland to support one sheep and the committee was of opinion that five acres would be about the average. The land used for sheep grazing is high, broken land and some of it is swampy and unproductive of feed. The number of sheep which one shepherd could look after was considered as about 500, so that for the stock necessary to the support of one shepherd and his family 2,500 acres would be required.

On the other hand, the evidence brought out in regard to the number of people supported by a forest on such lands showed that 100 acres of forest would be the average per man employed, so that the 2,500 acres required to support one shepherd and his family would support 25 woodmen and their families.

This is a comparison of the two uses of the land in a country where each is most highly developed, and shows their final relative possibilities as supporters of population on lands that are rough and elevated.

CANADIAN FORESTRY ASSOCIATION.

The annual business meeting of the Canadian Forestry Association will be held at the Board of Trade rooms, Ottawa, on February 5th at 11 a.m. It will be devoted to a review of the business of the past year, arranging for the work of the coming year, passing of accounts, election of officers, etc. Mr. Thos. Southworth will move that the publication of the Canadian Forestry Journal be discontinued, and that the money now spent on that be spent extending the issuing of bulletins to newspapers and other forms of publicity.

TRADE AND MANUFACTURERS' NOTES

A NEW STEEL BELT CONVEYOR.

Various improvements in mechanical devices for handling all kinds of materials have been made from time to time, but none of them possess the extreme simplicity and durability of the steel belts recently put on the market by the Canadian Boving Company, Limited, 164 Bay Street, Toronto. Where regular hydraulic transportation is required endless chains or belts have usually been employed. They, however, possess disadvantages owing to their great weight and their inability to discharge material at any point of the track, besides requiring considerable more power to operate. The steel belts eliminate all these disadvantages, and, at the same time, possess wearing qualities which the belts more generally in use, namely (balata, cotton or rubber) do not have, more especially when handling rough materials. The belts are made of the finest grade Swedish steel rolled into a thin hard flexible band, having a thickness of 20 or 21 wire gauge. They are made in lengths of 330 feet and in widths of from 8-inch to 16-inch. They can be readily rivetted together so as to give any required length. Where a greater capacity is required than that given by one 16-inch belt, two can be placed side by side. Steel belts are specially adapted for various kinds of conveyors in pulp mills, and they have the following advantages:



Cut No. 1—Shows a steel belt which is 16 inches wide, 270 feet long, 20 wire gauge at the Sandviken Works.



Cut No. 2—Shows a conveyor for coal with a scraping off device.



Cut No. 3—Shows transporting and unloading of sacks.

Cheapness—The belt are considerably cheaper than cotton belts.

Durability—The belts will last for several years without wearing out.

Small Power Consumption—Take much less power than any other form of belt.

The Belts Can Be Loaded—Nearer to the edge than cotton belts.

In Sandviken, Sweden, where the steel belts are manufactured, there has been installed a complete testing station for testing the belts and the various types of materials which can be transported.

They are especially suitable for wood logs, planks, wood chips, sand and iron ore, coal, charcoal, etc., etc. The design of the conveyor is somewhat different from the design of the ordinary cotton belt type, and each case has to be carefully studied on the spot.

Pulp mills, which often have large repairing shops, can usually manufacture all the parts required for the conveyors themselves, and the following general description gives the main details:



Cut No. 4—Shows transporting sand at an angle of 23 degrees.

The end pulleys are made with cast iron centres covered with wood and a thin sheet of rubber. The diameter of these pulleys should not be less than 40-inch, preferably 48-inch, and the width a little greater than the width of the belt. One of these end pulleys should be provided with a tightening device for adjusting the tension on the steel belt.

The bearing pulleys are made of wood of about 12 inches in diameter.

The speed of the belt can be adjusted so as to suit existing requirements. As high a speed as 10 ft. per second has been used, but a higher speed will very seldom be of any use owing to the difficulty of loading the material on to the belt at this high speed.

One would imagine owing to the surface of the steel belt being so smooth that materials would slip and the conveyor capacity would be very small. This, however, is not the case, which is proved by the fact that sand is transported at an angle of 23 degrees.



Cut No. 5—Shows transporting charcoal in a Swedish iron works.

They are unaffected by rust, which is clearly demonstrated by the fact that many of them have been working in the open without any protection for a considerable number of years and are to-day running as good as when installed.



Cut No. 6—Shows a view of the Swedish iron works where the belts are manufactured.

HUGE DAM FOR ST. MAURICE RIVER.

A large dam, perhaps the largest in the world, is likely to be erected across the upper portion of the St. Maurice River, Quebec, in accordance with the recommendations of the Waterways Commission, of which Hon. T. N. Parent is chairman. Thousands of dollars have been annually lost by paper and lumber companies on account of low water or of unevenness in its flow. A dam and storage reservoirs, such as are proposed, would do much to relieve this state of things. Records made at Shawinigan indicate a fluctuation in the flow of the river from 6,000 to 200,000 cubic feet per second, so it is evident what an amount of equalization would be in order. The Commission proposes the damming of the St. Maurice at La Loutre Rapids, which, it is claimed, would provide an equable flow throughout the year of 18,000 cubic feet per second. The estimated cost is $1,300,000.

Erratum.—In the editorial in last issue on "Technical Education in the Paper Mill," the name of the gentleman who has been prominent in bringing paper mill education before the Royal Commission should have been given as Mr. T. Linsey Crossley, of Montreal, who has spent considerable time and energy in trying to bring this matter to a head.

PULP AND PAPER MARKETS

Toronto, January 15, 1913.

While the output of newsprint has been steadily increasing, the product so far has apparently been able, without serious difficulty, to obtain a footing through the increased demand from the West and from the United States. There was a slight easing off of prices late last year, but this now seems to have disappeared. Many of the mills have orders on hand for the entire year for a large proportion of their output.

Book and writing papers are in active demand and rumors are heard of coming advances, though nothing official has been announced. Manilas are in somewhat better demand. Bags are holding their position fairly well. In the ground wood market there is little change and not much doing.

High-water conditions in the Eastern States prevented the usual heavy demand from that quarter, and, as a result, Canadian mills have piled heavily and now have large stocks on hand. There has been no actual slump in prices, however, as it is believed the demand will yet improve. Sulphite is stronger and higher in price than ever, the explosion at the Laurentide mill having interfered with the usual supply from that quarter, the demand being very heavy in any case.

Quotations (f.o.b., Toronto), for paper, pulp and paper stock are as follows:

Paper.

News (rolls) $42 to $45, according to quantity.
News (sheet) $45 to $50, according to quantity.
Book papers (carload) No. 3, 4½c. to 4¾c.
Book paper (broken lots) No. 3, 4½c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2, 5½c. to 5¾c.
Book papers (carload) No. 1, 5½c. to 6¼c.
Book papers (broken lots) No. 1, 6¾c.
Writings 4½c. to 7½c.
Bonds, 8c. to 18c.
Fibre, 3¾c. to 4c.
Manilla B., 3c. to 3½c.
Manilla No. 2, 3½c. to 3¾c.
Manilla No. 1, 3¾c. to 4¼c.
Kraft, 4c. to 4¾c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $47 to $49, delivered in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

Waste paper, $9 to $10.
No. 1 hard shavings, $1.85.
No. 1 soft white shavings, $1.80 to $1.85.
Mixed shavings, 60c.
White blanks, $1.00.
Ledger, $1.15 to $1.20.
No. 1 book stock, 85c. to 90c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.10 to $1.15.
No. 1 print manillas, 60c.
Folded news, 55c.
Over issues, $14.
Over issues (folded), $15.
No. 1 clean mixed paper, 42½c. to 47½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50 to $5.75.
Fancy shirt cuttings, $4.10.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.60.
Ordinary satinets, 85c. to 90c.

Montreal, January 14, 1913.

Conditions in the pulp and paper market remain satisfactory, despite the increase in production and the somewhat lower prices in the United States. As a matter of fact, all the Canadian mills are running to capacity and are finding an outlet for their paper and sulphite. The reduction in the United States has not affected the Canadian market. Previously, prices were some two or three dollars higher on the American side of the border than they were in Canada, and the recent reduction brings those prices down to a level with those prevailing in Canada.

News delivered in the United States runs from $42 to $44 per ton, while in Canada it runs from about $41 to $45. No. 1 unbleached sulphite varies from $46 to $47 delivered in the United States and from $41 to $45 delivered in Canada. Other prices, with the exception of ground wood, remain satisfactory.

The following prices are for paper, pulp and paper stock revised to date:

F. O. B. Montreal.

Paper.

News, $42 to $44, delivered in United States.
News, $41 to $45, delivered in Eastern Canada.
Newsprint, sheets, $2.25 at mill.
Book papers, carload lots, No. 3, 4½c. to 4¾c.
Book papers, broken lots, No. 3, 4½c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3½c.
Broken lots, No. 2, 5½c. to 5¾c.
Carload lots, No. 1, 5½c. to 6¼c.
Broken lots, No. 1, 6c. to 6¾c.

Wrappings.

Manilla B., 3¼c. to 3¾c.
Fibre, 3¾c. to 4c.
No. 2 manilla, 3½c.
No. 1 manilla, 3¾c. to 4¼c.
Kraft, 4¼c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.65 to $1.75.
No. 1 soft white shavings, $1.60.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50c. to 55c.
White blanks, 80c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c.
Manilla envelope cuttings, $1.05.
White envelope cuttings, $1.75.
No. 1 print Manillas, 65c.
Folded news, 50c.
Crushed news, 45c.
Good mixed paper, 40c. to 45c.

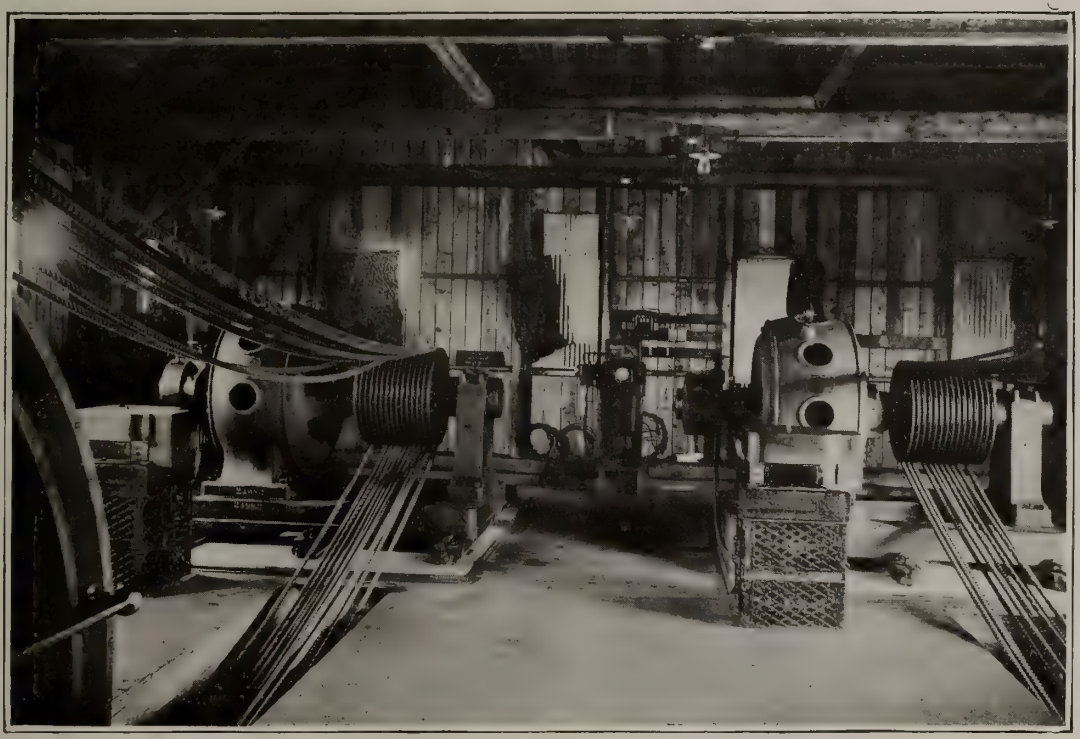
Rags, old and new, per 100 lbs., f.o.b. Montreal:
Old white cotton, $2.50.
Mixed cottons, $1.75 to $1.90.
Light cottons, $1.90.
No. 1 white shirt cuttings, $5.00 to $5.50.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $1.75 to $2.00.
Blue overall cuttings, $3.40 to $3.50.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.50 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.50 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.25.
New light flannelettes, $3.75 to $4.00.

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Ordinary satinets, 50c. to 75c.
Tailors' sweepings, 65c. to 70c.

Pulp.

Ground wood (at mill), $14.50 to $15.
Sulphite, No. 1 unbleached, $46 to $47, delivered in U.S.
Sulphite, $41 to $45, delivered in Canada.
Sulphite (bleached), $51 to $53.

* * * *

Ottawa, January 13, 1912.

A firm pulp wood market and a rather weak one for wood pulp are features of the local trade situation. There has been no movement in prices during the last three weeks in paper, though the demand for newsprint keeps up and other lines have no trouble in finding a market. The sulphite market is very firm, around $45. The weakness of the wood pulp market is attributed here to some extent to the large production of United States mills.

BRITISH MARKETS.

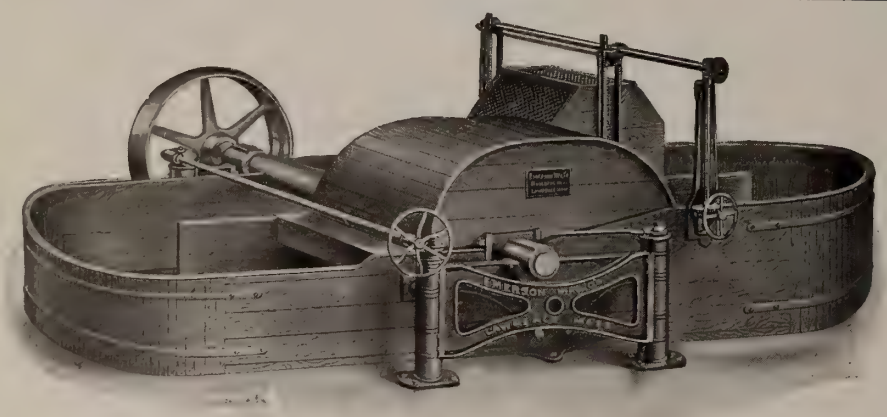
Conditions in the paper trade of Great Britain continue good. The market for ground wood is fairly firm, while chemical pulp is also strong. Rags and paper stock are in good request. Chemicals show but little change.

SCANDINAVIAN MARKETS.

According to a recent report from C. E. Sontum, Canadian trade agent at Christiania, "the value of mechanical wood pulp has gradually hardened and is to-day nearer $9.87 than $9.67 f.o.b. both for prompt and for delivery over next year, and we understand that a fair proportion of next year's output in Norway has already been disposed of . Cellulose is also steadily advancing; for strong sulphate $37.87 has been obtained, and makers are holding out for $40 for strong sulphite, while easy bleaching sulphite is tending toward $42.67 f.o.b. This would be good news for shareholders in Norwegian cellulose mills after several years of unprofitable trading if the cost of production did not tend to advance quite as rapidly as selling prices. The pulp market in Sweden is very firm for all kinds, as the mills now have very nearly disposed of their entire production for 1913. In England the consumers seem to be well supplied, but from the United States there is a very lively inquiry and from that country it has even been tried to contract for 1914 and 1915. The Swedish quotations are at present per ton net, f.o.b.:

STOCKS OF NEWSPRINT PAPER.

Stocks of newsprint paper, November 30, 1912, according to reports of the American Paper and Pulp Association to the Commissioner of Corporations, Washington, were 43,504 tons, a decrease of 3,007 tons from October. Stocks November 30, 1911, were 38,650 tons. The decrease was largely due to heavy shipments during November, these being 109,801 tons. Production was 106,715 tons, a decrease of 2,249 tons. The production was 94 per cent. of the computed normal, against 97 per cent. in November, 1911. The average actual daily output was 4,104 tons, against a computed normal of 4,366 tons. For the eleven months ended with November the production was 95 per cent. of the computed normal, as compared with 93 per cent. in each of the full calendar years, 1909, 1910, and 1911.



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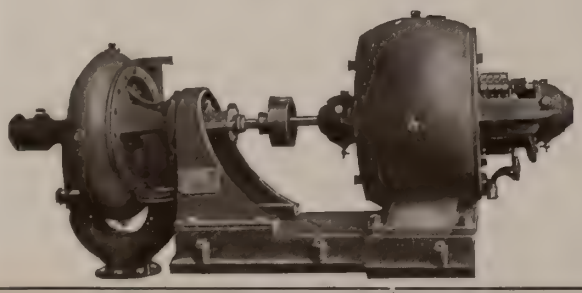
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Barkers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Canadian Barker Co., Ltd., Sault Ste. Marie, Can.
Green Bay Barker Co., Green Bay, Wis.
Jenckes Mach. Co., Sherbrooke, Can.
Hamilton, Wm., Co., Peterboro, Can.
Holyoke Machine Co., Holyoke, Mass.
Waterous Engine Works, Brantford, Can.
Valley Iron Works, Appleton, Wis.

Beaters
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Holyoke Mach. Co., Holyoke, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Valley Iron Works, Appleton, Wis.
Waterous Engine Works, Brantford, Can.

Beater Rolls
Bentley & Jackson, Bury, Eng.
DeCew, J. A., Canadian Express Bldg., Montreal, Can.
Marx, J. & Co., London, E.C., England.
Tippet Arthur P. & Co., Montreal, Can.

Belting
Dominion Belting Co., Hamilton, Can.
Reddaway, F. & Co., Montreal, Can.
Sadler & Haworth, Montreal, Can.

Bleaching Powders
Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Winn & Holland, Montreal, Can.
Klipstein, A. & Co., Ltd., Montreal, Can.

Boilers
Jenckes Machine Co., Sherbrooke, Can.
McDougall, J., Caledonian Iron Works, Montreal, Can.

Brass Wire Cloth, Fourdrinier Wires
Christie, Geo., Ltd., Glasgow, Scotland.
Finckh, Hermann, Reutlingen, Germany.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier St., Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Camel Hair Belting
Reddaway, F. & Co., Montreal, Can.

Calendar Rolls
Dillon Machine Co., Lawrence, Mass.
Farrell Foundry & Mach. Co., Ansonia, Conn.
Holyoke Machine Co., Holyoke, Mass.

Chemicals, Colors, Etc.
Brunner, Mond & Co., Montreal, Can.
Gewerkschaft Sachtleben, Homberg, Niederrheim, Germany.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter St., Montreal, Can.
Meincke, C. A. & Co., Coristine Bldg., Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Holyoke Machine Co., Holyoke, Mass.
Valley Iron Works, Appleton, Wis.

Cutters
West End Engine Works, Edinburgh, Scotland.
Dillon Machine Co., Lawrence, Mass.
Chambers & Simpson, Toronto.

Conveying Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Garland, M., Co., Bay City, Mich.
Jeffrey Mfg. Co., Montreal, Can.

Digester Lining
Can. Boving Co., Toronto.
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.
Swenson Evaporator Co., Chicago, Ill.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Evaporators
Scott, Ernest & Co., Fall River, Mass.
Swenson Evaporator Co., Chicago, Ill.
Zaremba Co., Buffalo, N.Y.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Hamelin & Ayers Co., Lachute Mills, Can.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Holyoke Machine Co., Holyoke, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

Lamps
Fornstedt, Gustaf, Three Rivers, Can.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

MILL SUPPLIES CONTINUED

Laying Machines
Heinbach, Thos. Jos., Ltd., Duren, Germany.
Chambers & Simpson, Toronto.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Appleton Machine Co. Appleton, Wis.
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Fischer, Julius, Nordhausen, H., Germany.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Holyoke Machine Co., Holyoke, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Storrer, H. F., New York, N.Y.
Swenson Evaporator Co., Chicago, Ill.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel, Chr., Reutlingen, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Canada Foundry Co., Ltd., Toronto.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Scales
Mardon, Alfred H., London, E., England.

Screen Plates
Can. Boving Co., Toronto.
Union Screen Plate Co., Fitchburg, Mass.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., Wurtemberg, Germany.
Wandel, Chr., Reutlingen, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Cranes
Holyoke Machine Co., Holyoke, Mass.
Garland, M., Co., Bay City, Mich.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Hugh R. Blethen, 21 Park Row, New York, N.Y.
Northern Crane Co., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.

Turbines
Jenckes Machine Co., Ltd., Sherbroke, Can.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Voith, J. M., Wurtemberg, Germany.
Smith, S. Morgan, Co., York, Pa.
Smith, S. Morgan Co., York, Pa.

Water Wheels
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Can. Boving Co., Toronto.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

MILL SUPPLIES CONTINUED

McDougall, John, Caledonian Iron Works, Montreal, Can.
Hamilton, Wm. Co., Peterboro, Can.
Holyoke Machine Co., Holyoke, Mass.

Wire Cloth for Paper Machines
Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Finckh, Hermann, Reutlingen, Germany.
Kufferath, Andreas, Mariaweller, Germany.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste
Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Wet Machines
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C. & Co., Ltd., Craig St., Montreal, Que.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

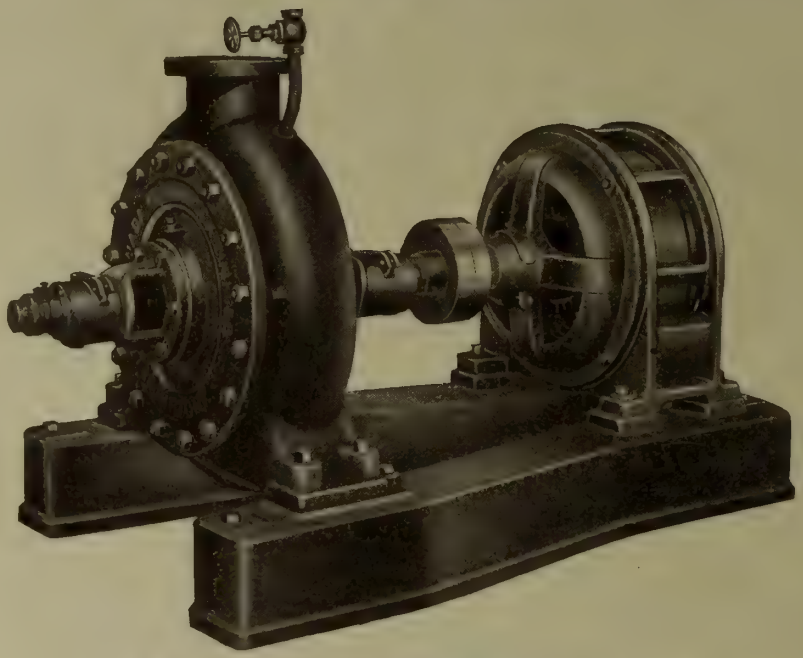
Bag—
Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, J. C. & Co., Ltd., Montreal, Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—
McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—
Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—
Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

MATHER & PLATT TURBINE PUMPS



Especially adapted for circulating pumps for Pulp and Paper Mills.

Over 100 of these pumps have been supplied by us during the past year, from Mather & Platt's designs, and built in Canada.

Let us figure on your specifications for large or small pumps.

CANADA FOUNDRY COMPANY, LIMITED

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Direct Current

❀

Alternating Current



Standard Speeds Frequencies Voltages

INDUCTION MOTORS

C. G. E. Electric Motors are noted for efficiency over wide range of loads, and are designed for strength and reliability. We have a motor for every purpose.

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PAPER MILLS CONTINUED

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson & Co., Ltd., J. C., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Richard & Co., Petit Pre, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson & Co., J. C., Montreal, Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C. & Co., Ltd., 700 Craig St, Montreal, Que.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
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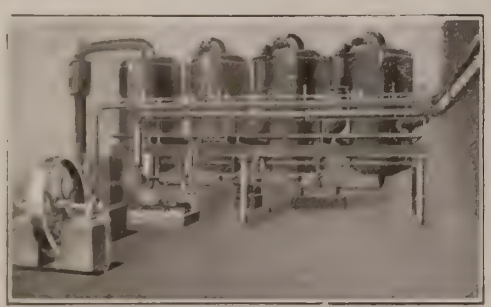
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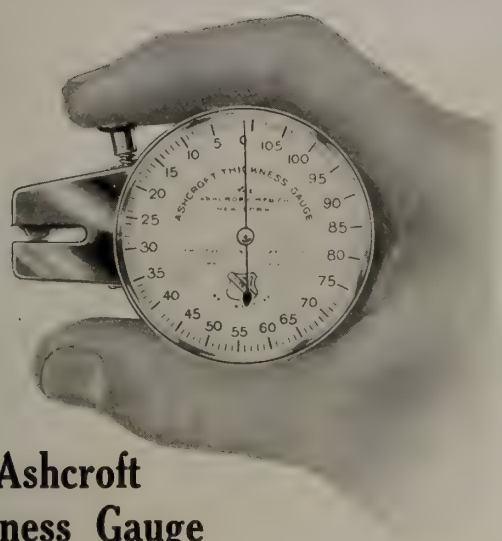
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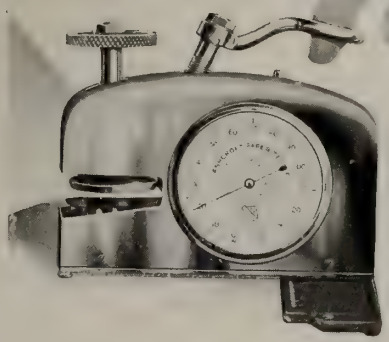
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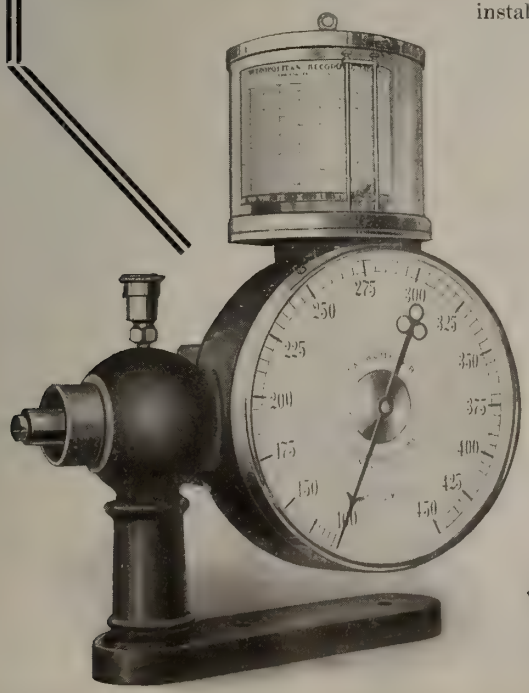
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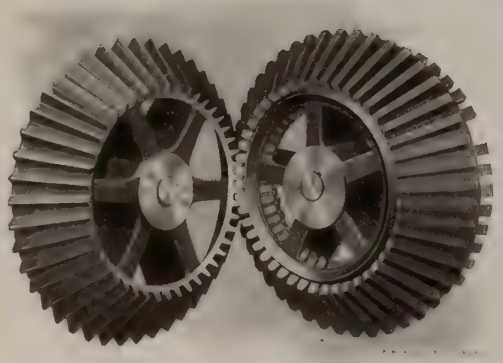
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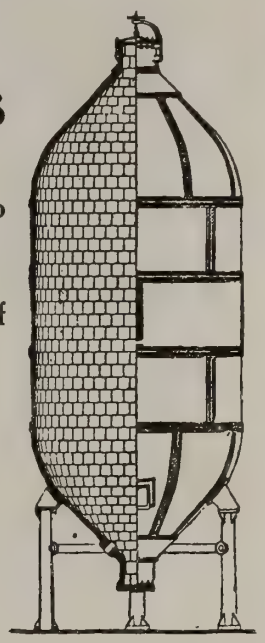
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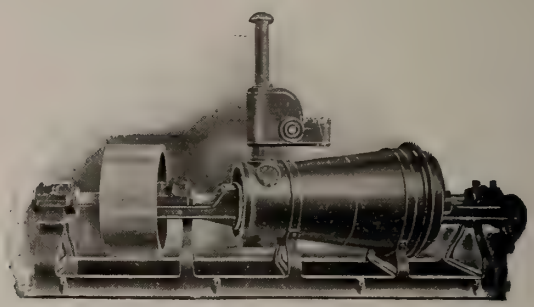
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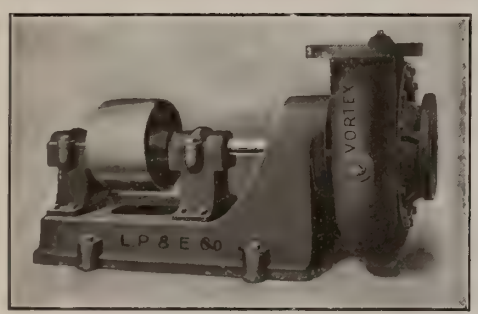
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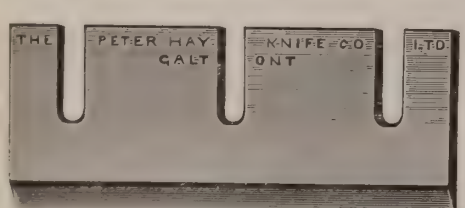
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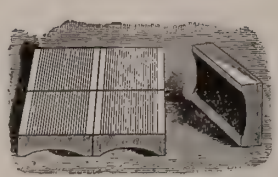
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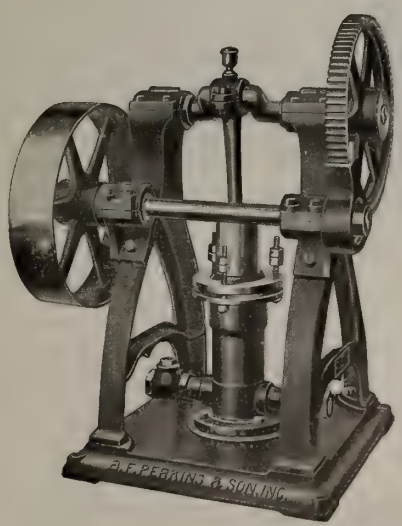
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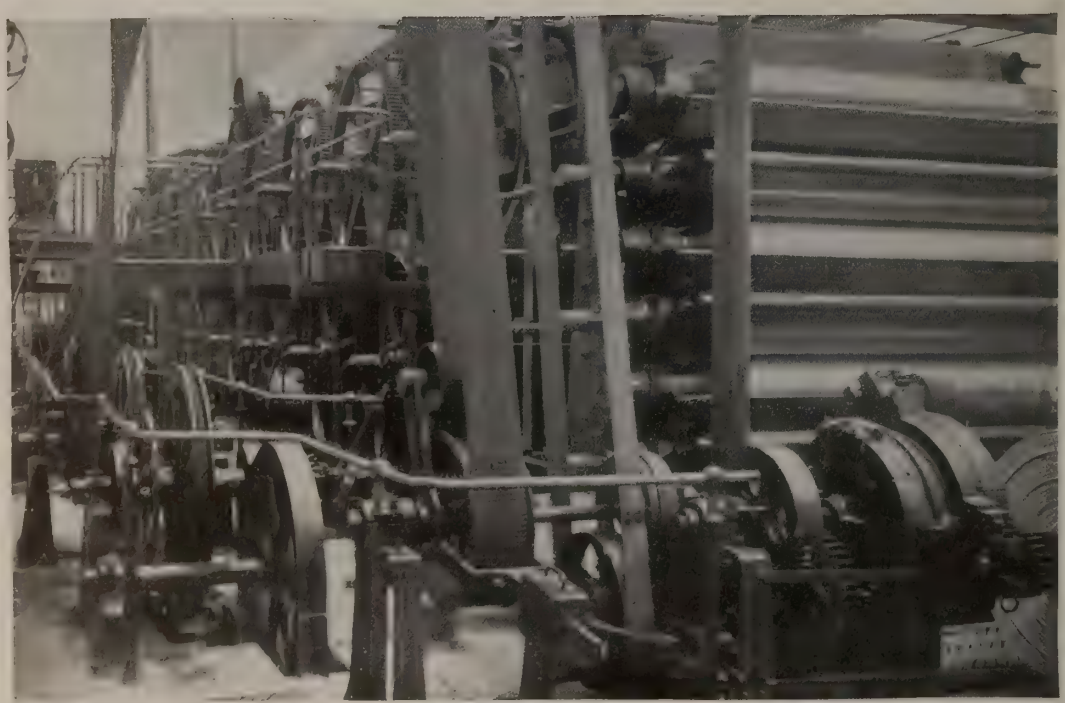
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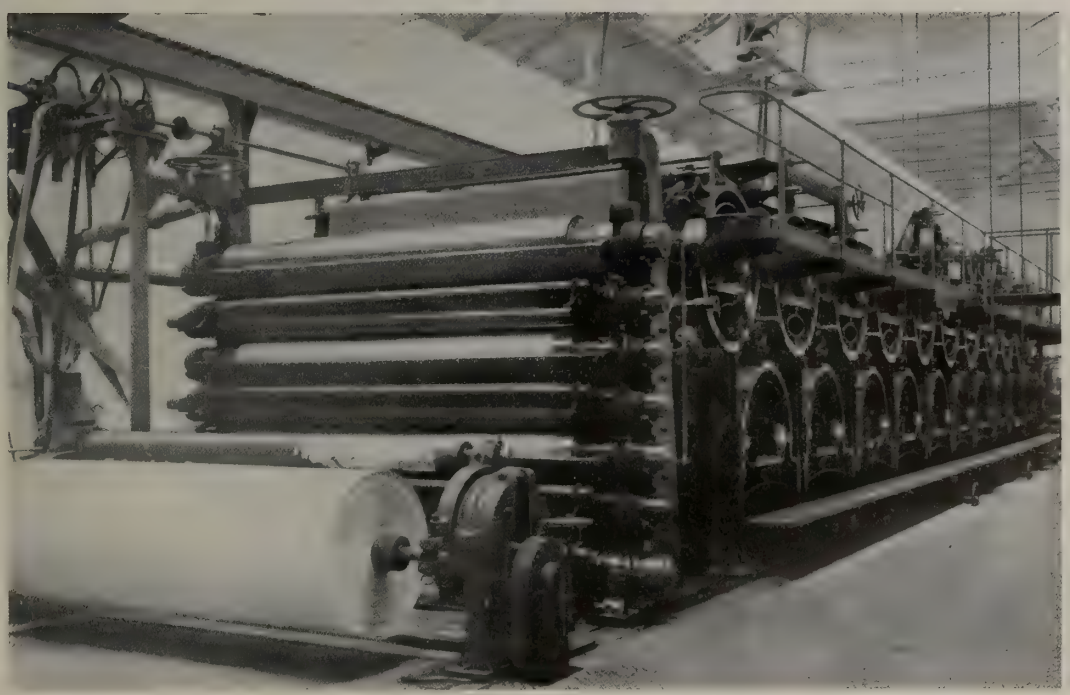
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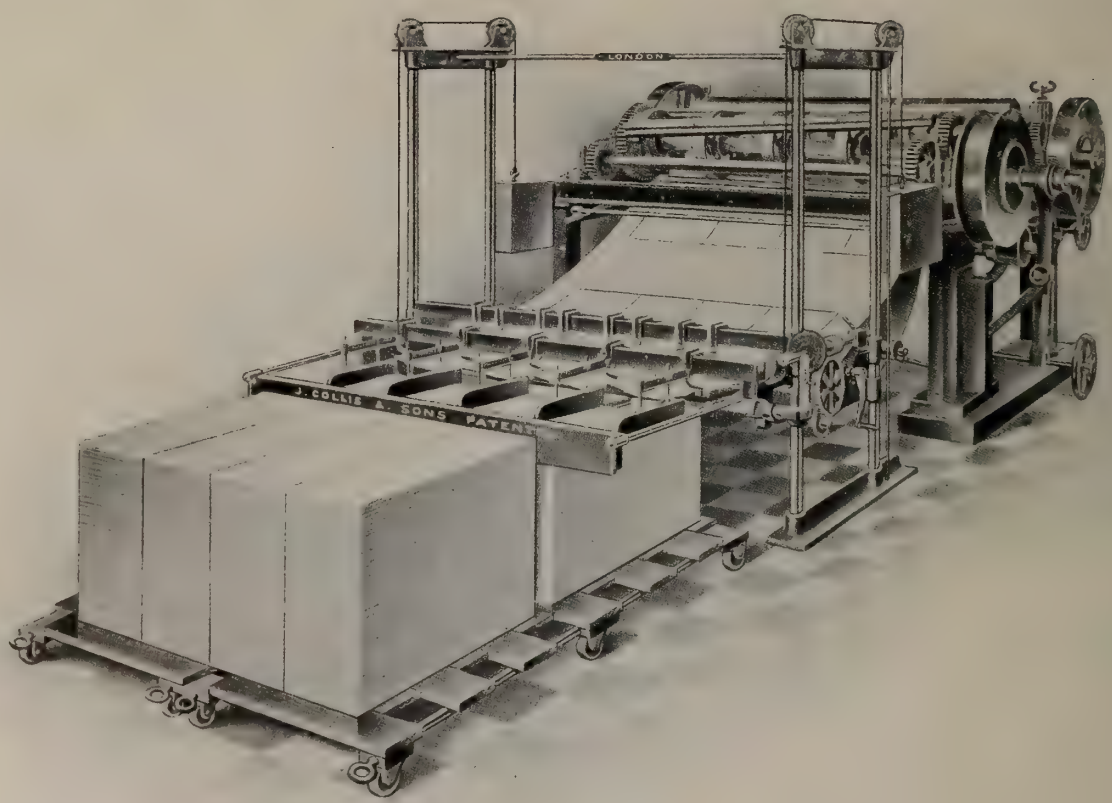
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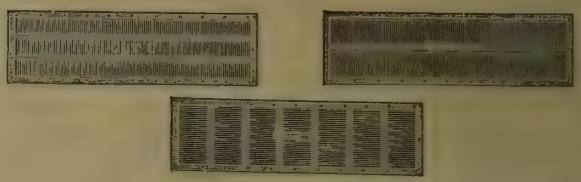
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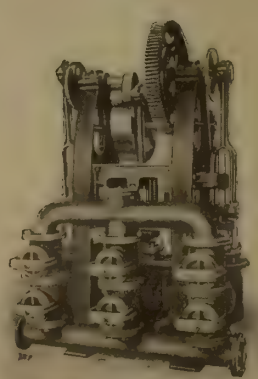
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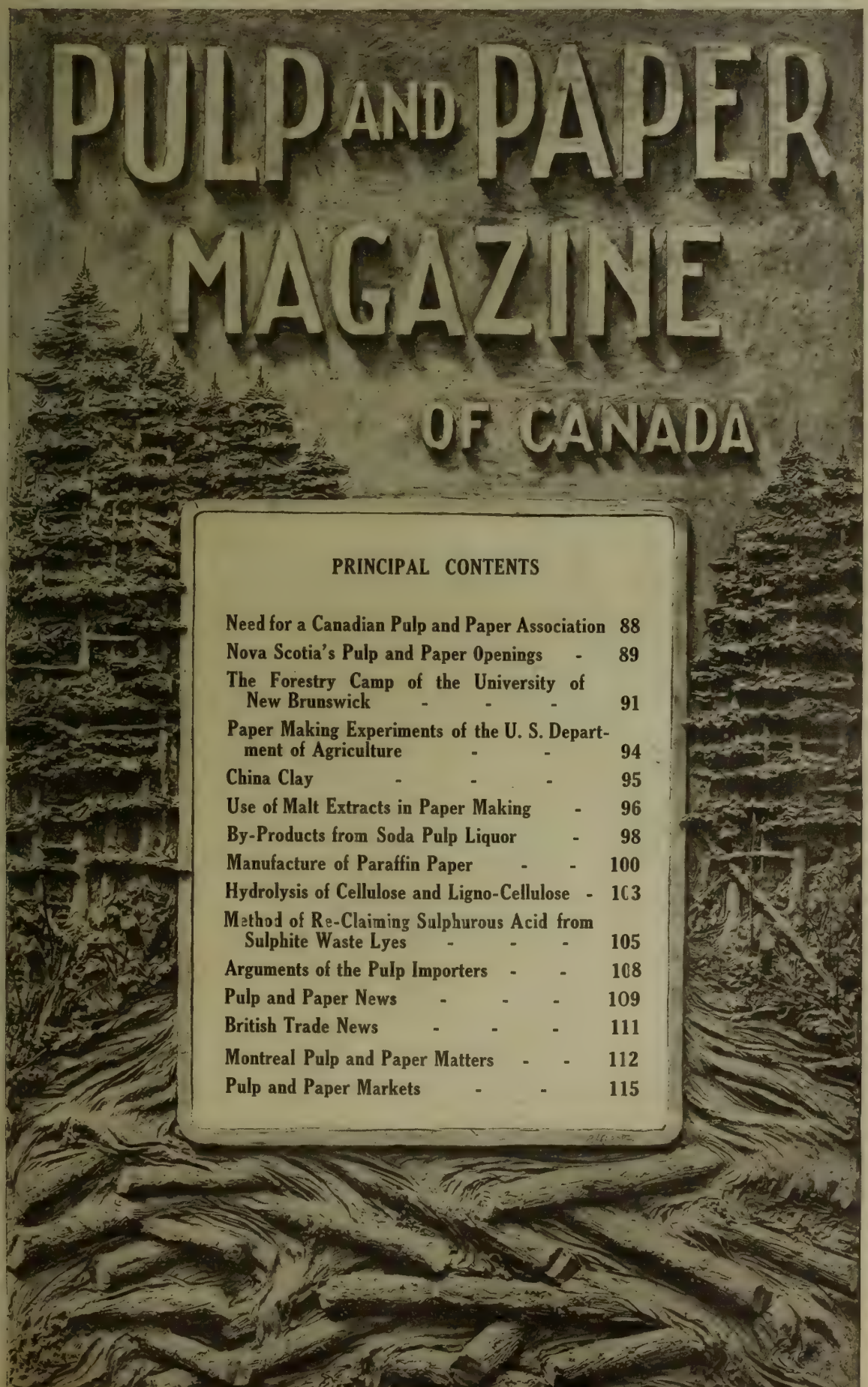
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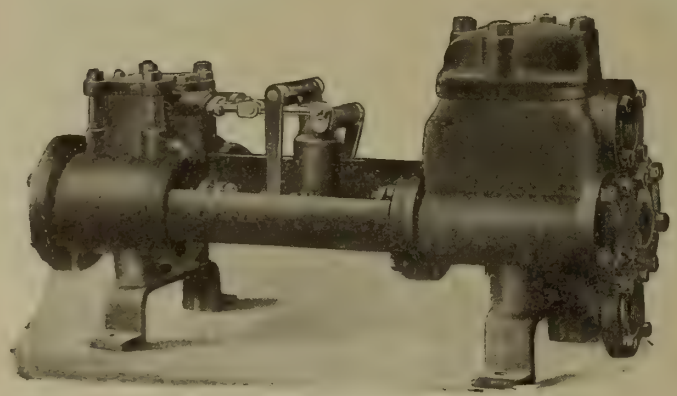
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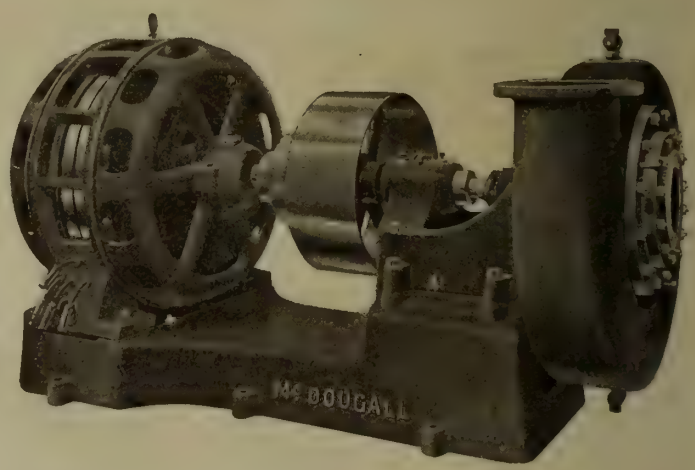
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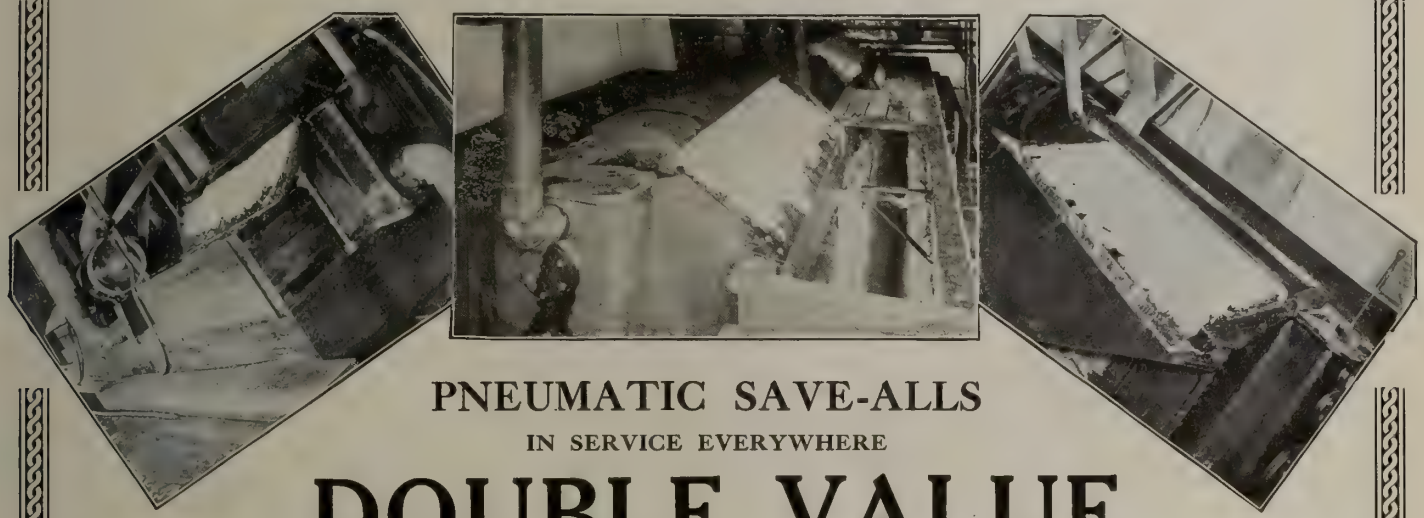
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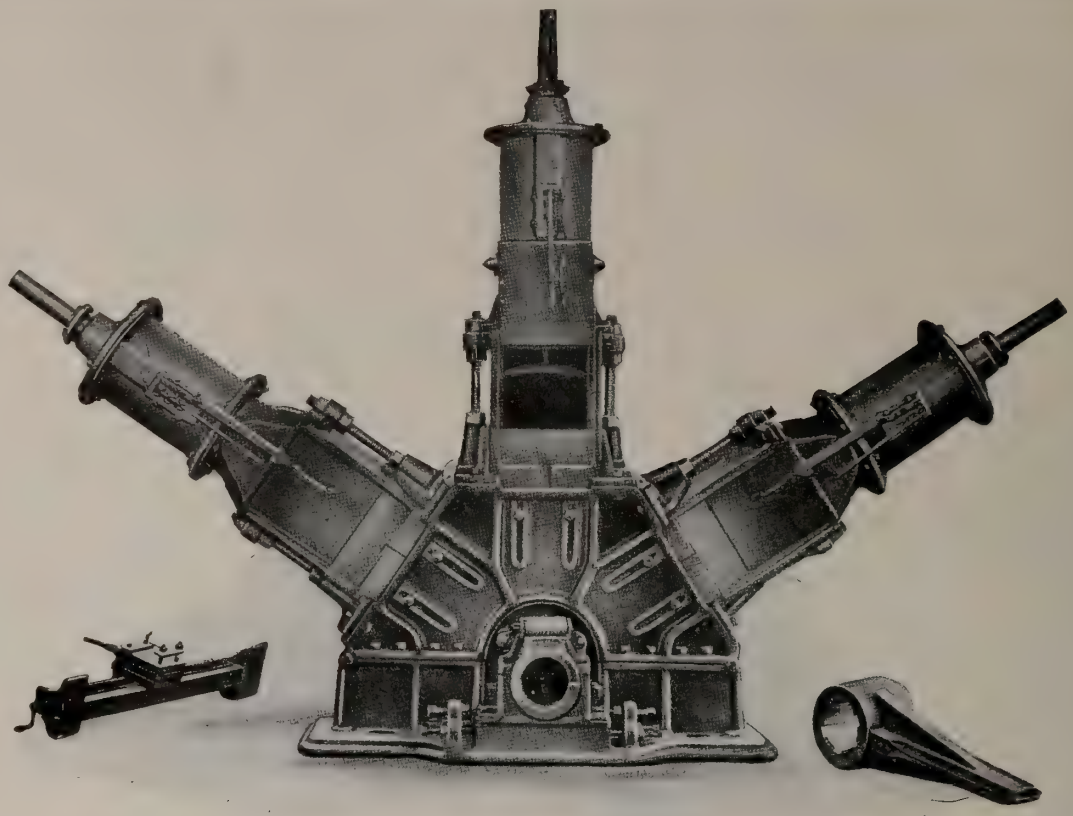
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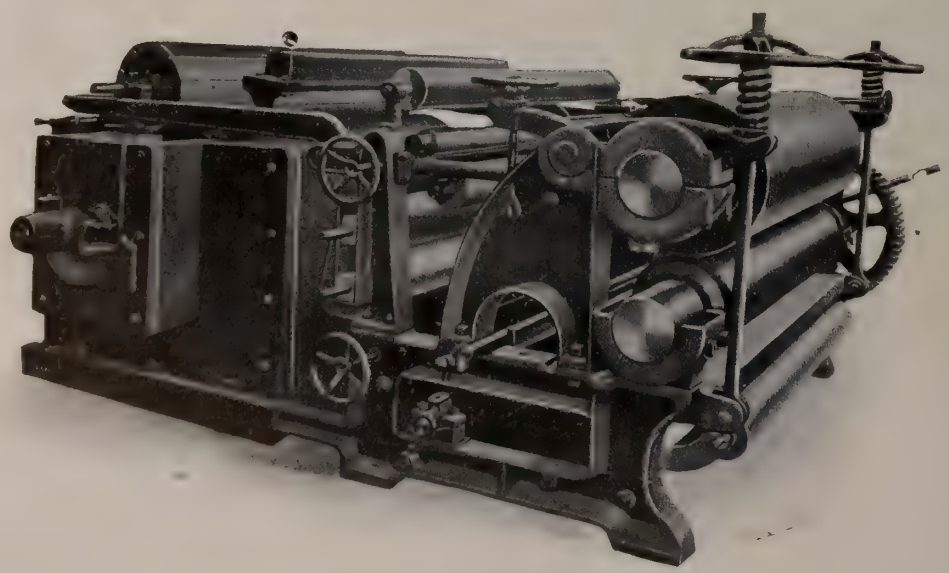
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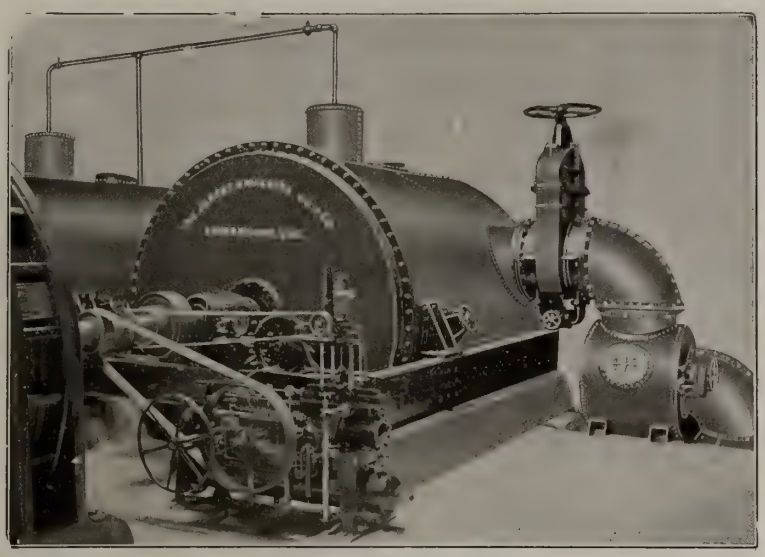
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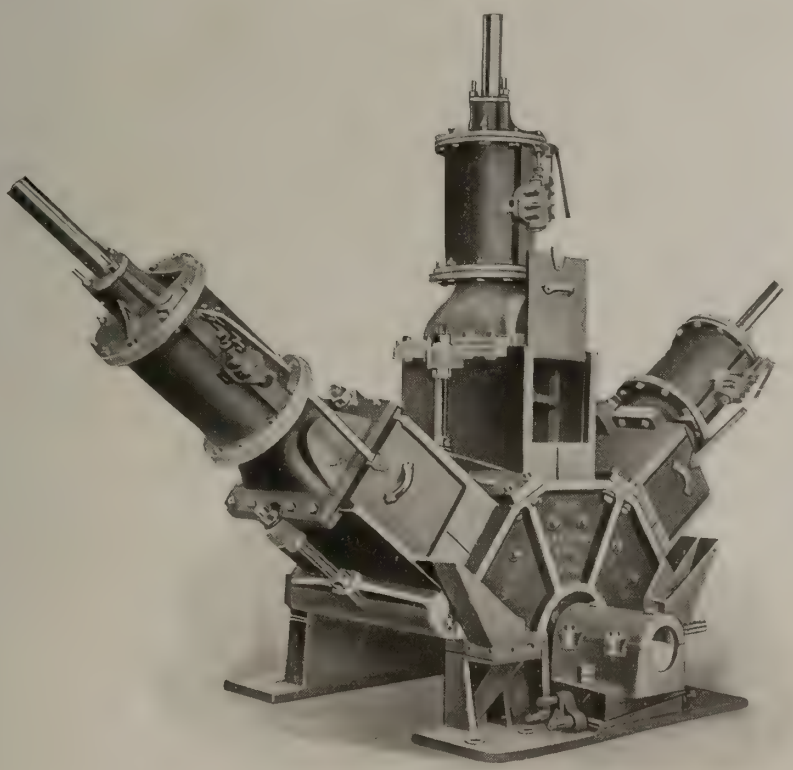
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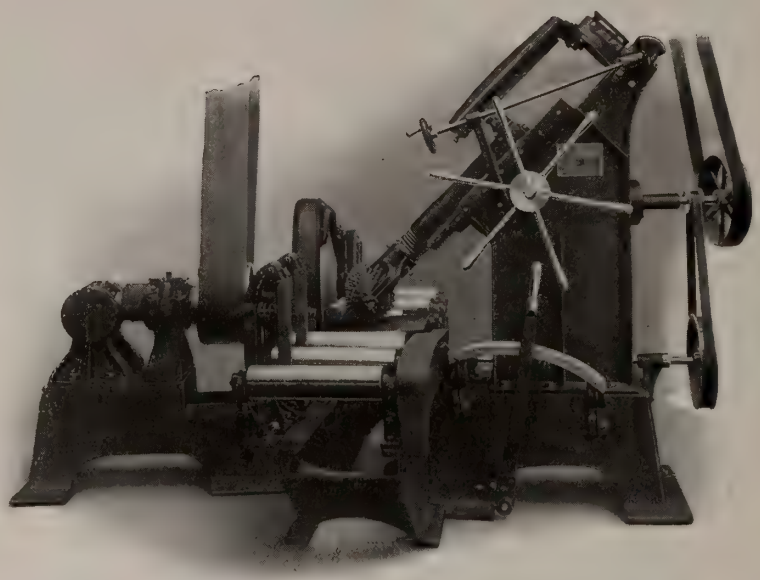
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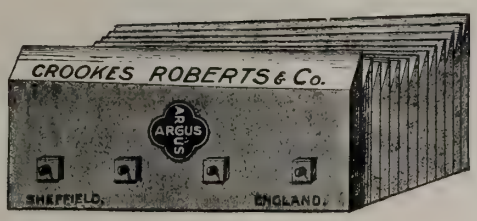
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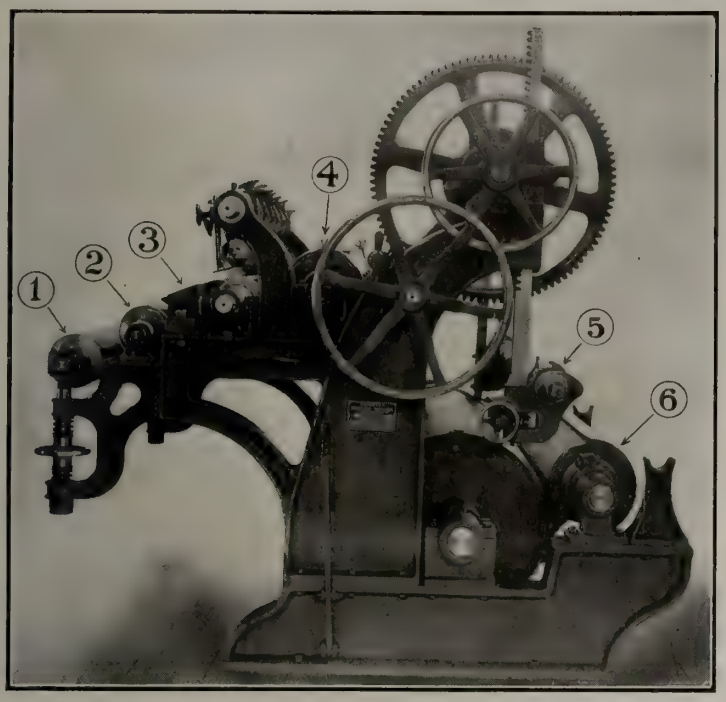
Complete Paper Mill Plants
Variable Speed Enclosed Steam Engines
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IMPROVED WARREN PATENT

Double Drum Winder

With Slitter Attachment Combined

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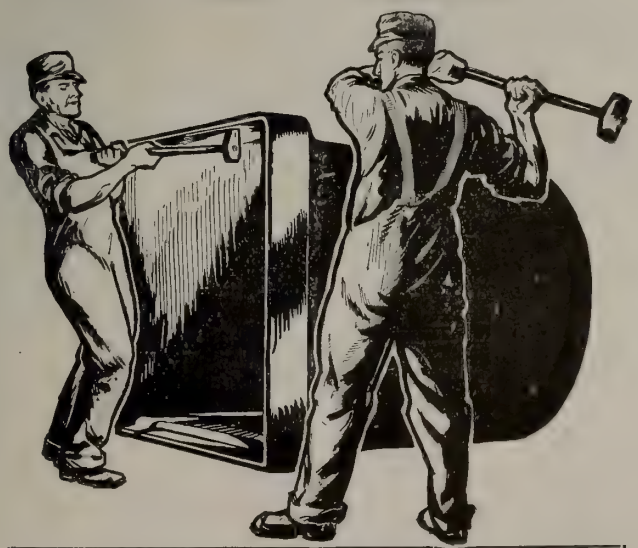
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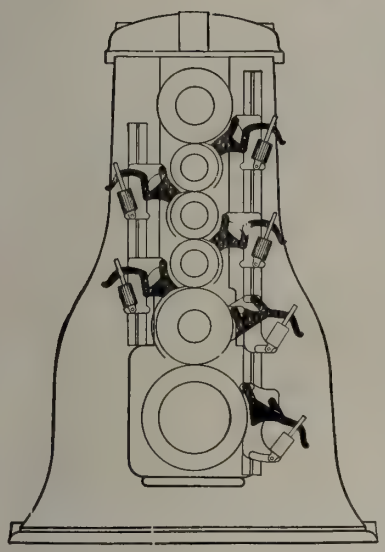
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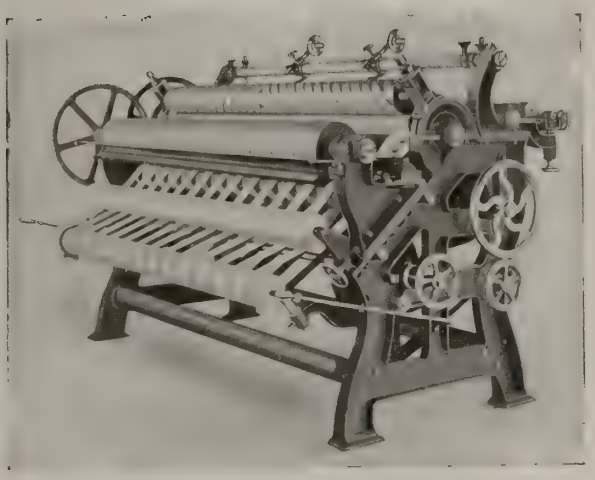
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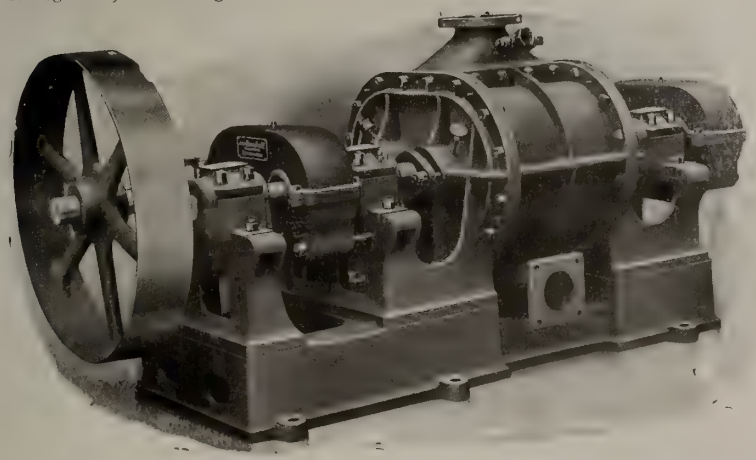
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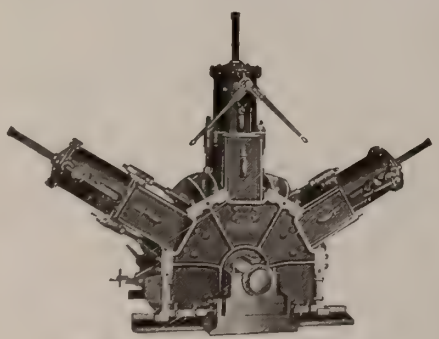
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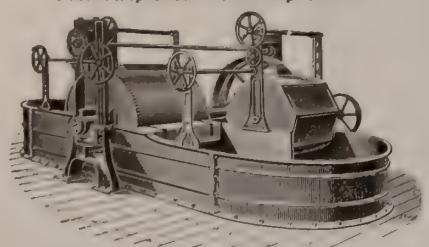
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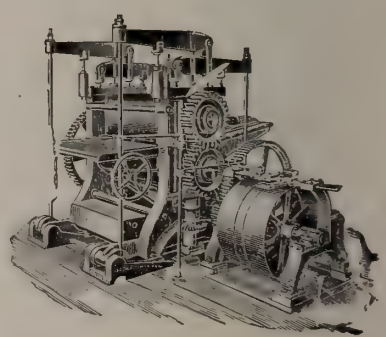
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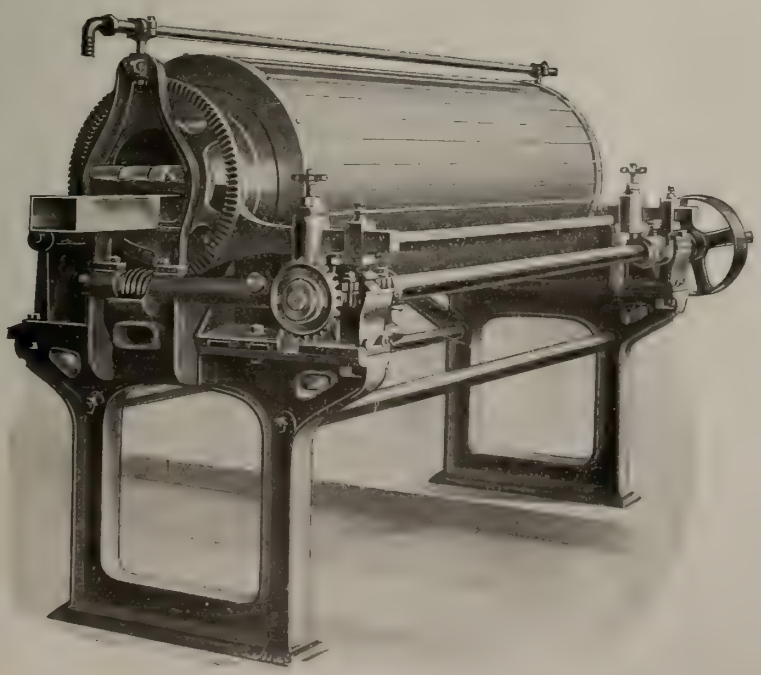
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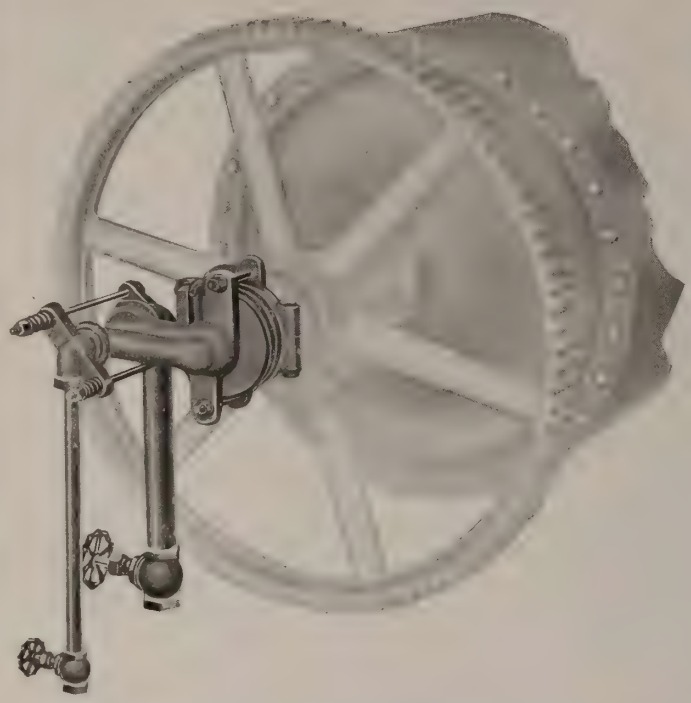
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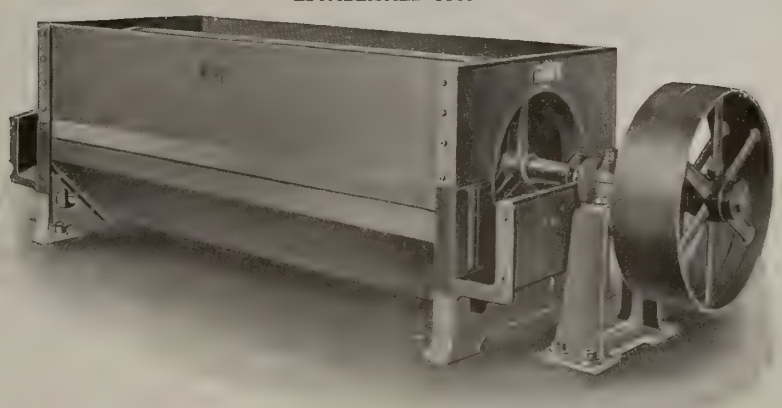
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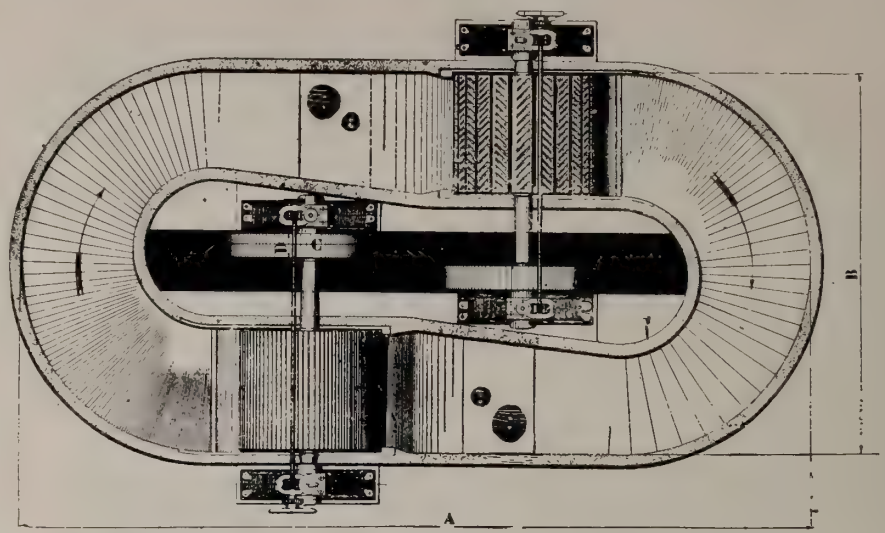
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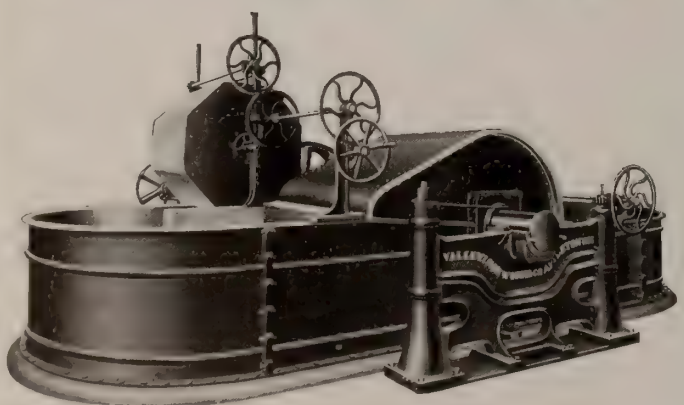
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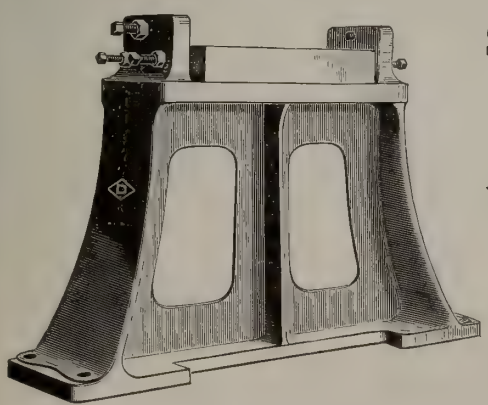
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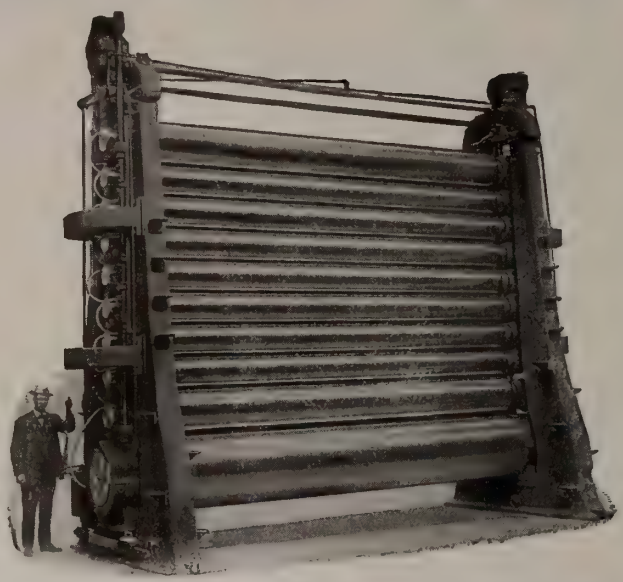
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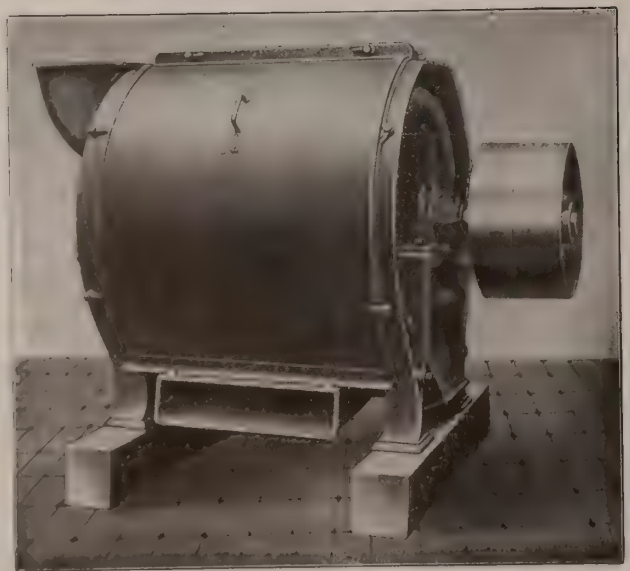
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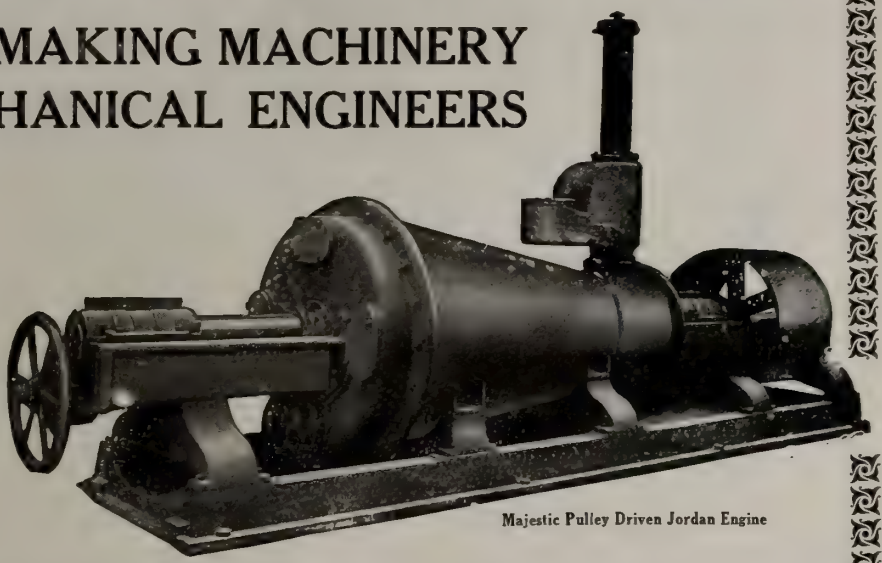
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Majestic Pulley Driven Jordan Engine

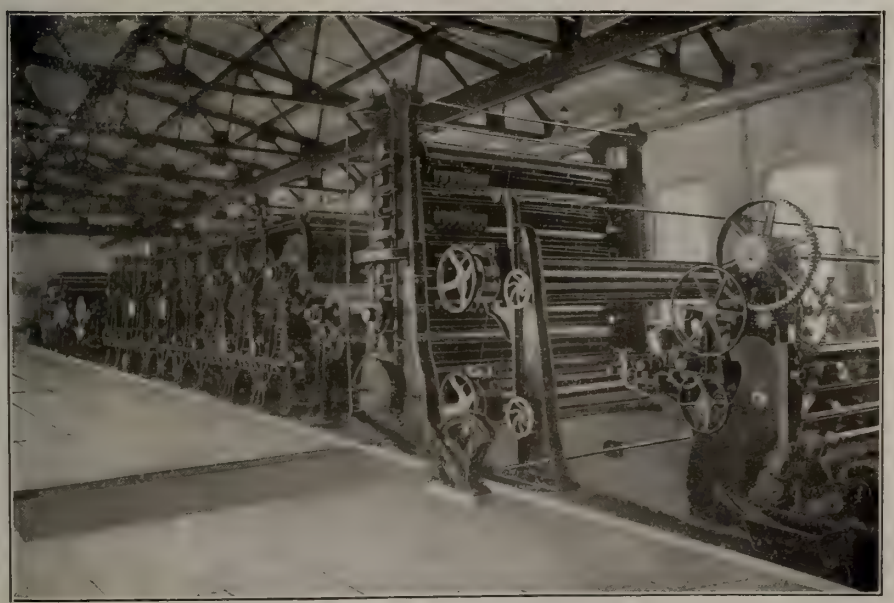
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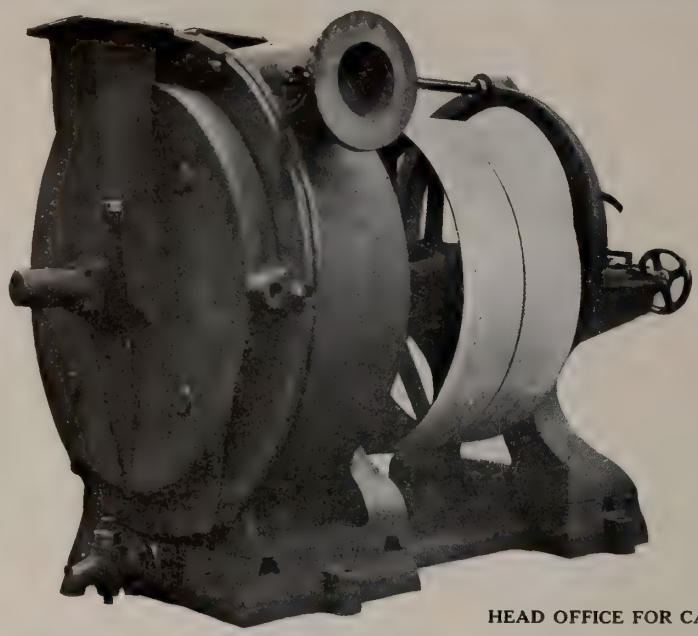
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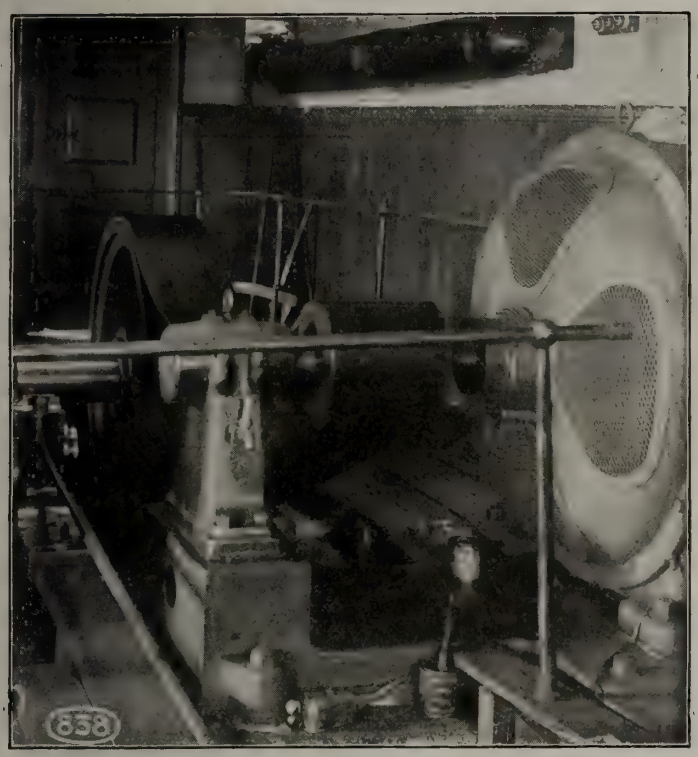
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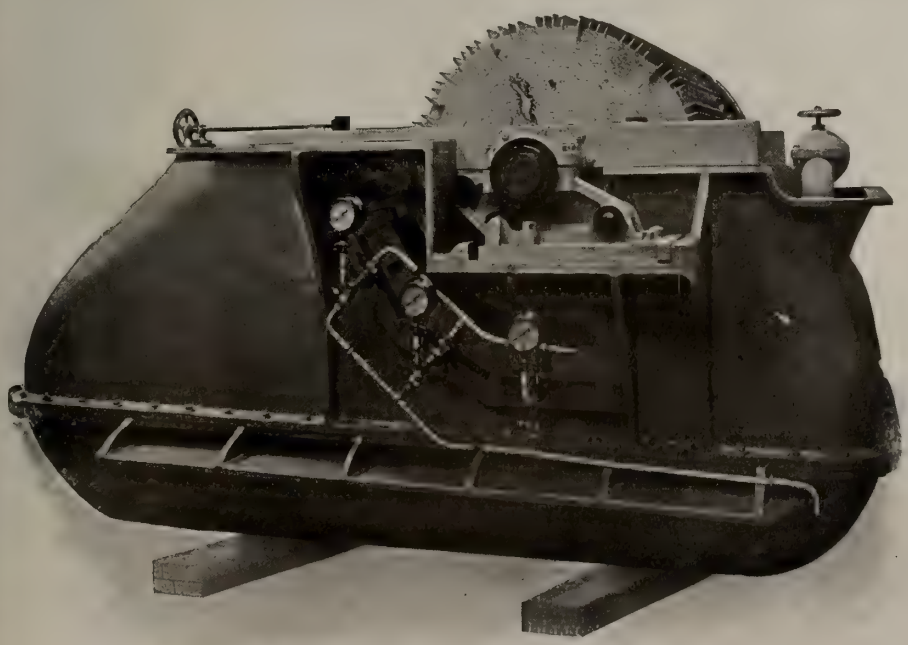
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Pulp and Paper Magazine

OF CANADA

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

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NEED FOR A CANADIAN PULP AND PAPER ASSOCIATION

When an industry grows to a point when its executive staffs number up into the hundreds and its employees into the thousands, when the various mills which carry it on are located in widely distant places under varying conditions throughout a wide stretch of territory, when that industry is divisible into component branches dependent on and yet to some slight degree antagonistic to one another, the day has arrived for the establishment of a good strong live association among all those identified with it.

The Pulp and Paper Magazine believes that there is emphatic need for a Canadian pulp and paper association to foster the interests of the whole industry from one end of the Dominion to the other. In the United States there is the American Paper and Pulp Association, which, under the leadership of Mr. Hastings has done such splendid work against almost unprecedented difficulties. In the United Kingdom there is the Papermakers' Association of Great Britain and Ireland (Inc.), and also another dealing with pulp; while in Germany and Scandinavia there are organizations of a similar character.

The objects of such an association as we have in mind would interfere in no wise with any existing body, such as the Canadian Manufacturers' Association; they would only be broader, but at the same time more concentrated and to this extent more productive of lasting good. It would incline in function to the work of the various mining institutes, engineering societies, etc., which are largely of an educational character.

Price-making would have no place in the field of its usefulness. We do not believe either that an industry or the individual firms of whom it is composed ultimately benefit by having the prices of the products which are manufactured, formulated by an association or committee of the same.

On the other hand, we believe that through the better understanding of the conditions confronting each individual member of an industry which comes about through frequent intercourse, such a wide mastery of the general needs of the business is attained, that ruinous competition—which generally speaking means ignorance of true cost of production—will largely be done away with. We believe that competition is good, that over-competition and cut prices mean disorganization as bad for consumer as producer, and that the best basis for any line of manufacture is a live rivalry between all its representatives when they are wide awake and know its possibilities and its limitations. And this is the best argument for a Canadian Pulp and Paper Asociation; for it is just this knowledge which it would be its main purpose to acquire and to disseminate among its members.

Such an organization would be in a position to establish and to perfect machinery for the gathering of reliable statistics as to production and markets, expert evidence as to future requirements, and so forth, which would be invaluable. Latest information as to the doings of competitors abroad, new inventions they might be experimenting with, new sources of supply

of raw material, would speedily find a way into its drag-net. In the event of legislation being proposed of either a friendly or an unfavorable character, the association could set expert enquirers at work to look into it from the point of view of the entire industry, and it could bring considerable influence to bear on the powers that be, either for the purpose of resisting or supporting it.

A case in point is illustrated by what has recently occurred in Quebec Province. In this connection we are neither praising nor condemning the action of Premier Gouin in lifting the embargo on pulpwood export. But it is evident, from the remarks on another page by our Montreal correspondent, that opinions of the various paper manufacturers in that province are sharply divided as to the wisdom and justice of the step. Had the matter been discussed in association beforehand by a large proportion of those directly concerned, as well as by those who conceivably might be affected by imitative legislation in other provinces, it is altogether probable that there would have been a greater degree of satisfaction at this stage.

Another point on which unanimity of feeling among manufacturers is most essential is in the matter of trade customs. Provided a usage is soundly based on correct principles, all members of a trade ought to conform to it. An association would greatly help, not only in laying down sound principles, but in enforcing the practice.

Educationally, such an association would be of untold benefit—and to the whole country, not only to individual members. Its object would be to encourage the best practical education of employees, and the best organization, the most economical processes and so forth on the part of executives for the purpose of gaining the best possible results.

One possible objection, namely that this particular industry is made up of so many different branches that a general association would be unable to cope with the many diverse problems confronted, may be disposed of by pointing to the sister organization in the United States, in which the different branches of the trade, book paper, writings, newsprint, etc., have each their respective committees, which discuss and deal with their own individual concerns separately and then report to the main body.

Socially, too, the meetings of the association would be of great value. This part of the subject is really bound up with the educational features before referred to. The educational aspect has largely to do with technical papers, industrial statistics, etc.; but almost as much good would accrue from social intercourse and the play of mind on mind.

The Pulp and Paper Magazine would like to learn the views of every man interested in the industry as to the prospects for forming an association of the above character, and invites correspondence.

PULPWOOD EXPORT AND U. S. TARIFF.

As announced in another column, the United States Government has refused to take down the bars against free entry of paper made from pulpwood grown on Crown lands from which the Quebec Legislature recently removed the embargo. The reason alleged for such denial on the part of Washington is that Quebec's action amounts to a discrimination against American holders of Crown lands, and that it defeats the intent of the wood pulp and paper clauses of the U. S. Customs Act. Apparently the feeling in the United States is quite general that Quebec is trying to obtain free paper by a trick in removing restrictions from export of pulpwood when there is a clear understanding that the wood will not be exported in any case, but only products thereof. The declaration of the U. S. Government, however, is only looked upon as having a temporary character, and made only in order to allow them to look more thoroughly into the matter.

Probably, the ultimate decision on the vexed question of entry into the United States for Canadian paper will lie with the result of the hotly fought battle between the newspaper publishers and the newsprint manufacturers, which is being waged before the Ways and Means Committee of the House of Congress. This is one reason why a good many people feel sorry that Quebec gave away one of Canada's chief cards, especially at a time when the incoming of the Democrats might help win our battle.

On the other hand, in fairness to Premier Gouin, one must not lose sight of such announcements as that in another column referring to the plans of the St. Lawrence Pulp & Lumber Corporation to build large mills in the province, largely as a direct result of the new policy.

The latest development is that pressure has been brought to bear upon the authorities in Ontario and New Brunswick to induce those promoters to follow Quebec's lead. New Brunswick, we understand, has definitely refused, while the Ontario Government, it is said, is standing aloof watching developments in Washington.

NEW BRUNSWICK PULP WOOD.

The policy of the Province of New Brunswick as expressed by Mr. R. G. Loggie in an interview with the Pulp and Paper Magazine is decidedly averse to the cutting of pulp wood under any conditions. It is the firm belief of the Government that the cutting of pulp wood is detrimental to the lumber industry in general, which is the pride of this province, as well as antagonistic to the principles of good forestry, in which the local authorities have inaugurated a most modern and scientific policy, greatly enlarging and strengthening that department. As a general principle and in much of the present practice this policy cannot be decried even by interests so intimately associated with pulp and

paper development as ourselves. More so since the avowed aims of this journal are to promote the principles of conservation and economic utilization of our natural resources. Indeed, we are heartily pleased to see the executive of any province so anxious regarding the resources under their administration.

The situation in New Brunswick has become aggravated chiefly on account of the nature of the provincial regulations, which have been more honored in the breaking than the observance.

The province has seven and a half million acres of Crown Land, five million of what is termed settlement land, and almost five million acres of private timber land. The present regulations state that nothing less than what will make a 16 foot log 9 inches on the top can be cut on Crown land. Probably 25 per cent. of the annual timber cut, however, is below this standard.

A more difficult situation to regulate, however, has arisen along the railroads, rivers and near the Maine boundary. Land is allotted to applicants for settlement even when timber licenses have been issued, and on each such allotment they are allowed to clear ten acres. The result has been that a man took up this and cut his ten acres, usually a little more, selling the wood for pulp wood, never actually settling on the land. Any merchantable timber cut, however, in this way was the property of the licensee of the limits before allotment. This has proven a prolific source of trouble and dispute. Again it was most annoying to such a licensee to have the best patch of spruce in his lease picked out and allowed to be used in this way. Hence a situation has arisen which serves to aggravate the lumber interests as well as the Crown Land Department, giving everyone concerned a horror at the mere mention of pulp wood.

The operations of about two hundred such settlers along the Maine boundary, who cut the wood as above and shipped or hauled across the line, has given rise to a special act which came into effect August 1st, 1912, called "An Act Respecting the Manufacture of Spruce and other Pulp Wood Cut on Crown Lands," which says that permits to cut spruce or other soft wood, not being pine or poplar suitable for manufacturing pulp and paper on ungranted Crown lands, shall contain the condition that all such wood must be manufactured into merchantable lumber, pulp or paper, or other merchandise, in Canada. This is intended to obviate the above difficulty and prevent the exploitation of natural resources by foreign mills.

As yet it is too early to say what effect the new act will have, but we venture to predict that the remedy will only be partial. The section of New Brunswick suffering most in this respect is the northwest corner, in the County of Madawaska, and here is where the law is very difficult to enforce. And when the majority of the people in any locality strongly favor the old order of things, and regard the new act as an instrument of the large limit holders, the enforcement will be most difficult.

New mills proposing to work Crown lands in New Brunswick will do well to investigate carefully and thoroughly understand the policy of the Government. We think the policy a little extreme, since there is much land in Northern New Brunswick of stunted growth, which can never be of value as merchantable timber, but offers excellent opportunities for pulp exploitation and would add to New Brunswick a train of the valuable industries following pulp and paper developments with the attendant pecuniary advantages to people and province.

NOVA SCOTIA'S PULP AND PAPER OPENINGS.

Nova Scotia shares little of the laurels of the pulp and paper industry. Not indeed for lack of resources which make such enterprises successful, or of openings for advantageous location of mills, but for lack of attention given to its possibilities by the financial men of the province. Then, too, with one or two notable exceptions, such as steel and car works, the province is accustomed only to enterprises requiring moderate capital or those which can grow from small beginnings. The general opinion seems to be that a development in pulp or paper requires a prohibitive initial outlay. Such is true compared with most of the Nova Scotia industries, as lumber, etc., which may start and get a good working footing on a much smaller minimum capital outlay. This opinion is, however, greatly exaggerated in most cases, due, doubtless, to the effects of reports of the enormous developments in Quebec and Ontario.

With the exception of the McLeod Pulp Company, and the old discarded plant at Hartville, pulp operations have been limited to small ground wood mills for the main part very inefficiently operated. The present slump and continued depression of the ground wood market has made havoc with the narrow manufacturing margin under such operation and the result is a general sore feeling in the pulp industry. This we doubt not will influence to an appreciable extent the future exportation of Nova Scotia in this regard, at least as far as interesting local capital in provincial enterprises. In this connection, also, the old disbanded plant at Hartville will have a similar tendency. This province has indeed been anything but successful in its pulp operations, and local interests with plans for development or expansion will do well to look into the broader Canadian field for encouragement and example.

The McLeod Pulp Company is the shining light of Nova Scotia's paper field, and well deserves the creditable position it now holds. To rebuild and put on an economical basis an old dilapidated plant is at the best a tedious and exacting task. This example of such a plant completely remodeled from earnings is a striking credit to the management who thoroughly appreciate their unique opportunities, with shipping facilities of an ice free port, abundant power still undevel-

oped, and the best of labor conditions. Their plans for expansion will doubtless meet with the success they well deserve. The Campbell Lumber Company, at Weymouth, have also emerged from a period of struggle after having their mill at Weymouth Falls completely destroyed by fire. Hampered by difficulties in securing capital, they have rebuilt and remodeled and have been operating their six grinders since October. Additional equipment is still being added, and the mill greatly improved. The second ground wood plant of this company at Sissiboo Falls, two miles farther up the Weymouth river, is completely dismantled and awaits the acquisition of about fifteen thousand dollars capital to rebuild it. This firm have struggled from small beginnings and now have a fine plant.

One difficulty which operates slightly against pulp manufacture in Nova Scotia is the scattered condition of the pulp wood forests compared with those of the other provinces. This makes logging costs somewhat higher, offset, however, to some extent by the very favorable labor conditions, which have no equal elsewhere in Canada. An interesting thing in connection with the logging here is the use of oxen in the bush. Outsiders are accustomed at first to laugh at their slow plodding habits and feel it is an antiquated method of making wood. But once the scoffer looks over the balance sheet he becomes a convert. For severe conditions and cheap upkeep, horses are outclassed in some branches of the work, and it is the combination of oxen and horses in the work at which each is best which makes Nova Scotia's lumber operations so successful.

Timber land here is nearly all held in fee simple and is not subject to any export duties. This offers very attractive openings for mills making grades of pulp and paper to cater to the American markets. The unexcelled shipping facilities create a decided advantage in entering the English markets.

Mr. J. B. Whitman, Deputy Commissioner of Crown Lands, is advocating and developing an extensive policy of forest preservation and protection, as well as reforestry of the barren and depleted areas. That things are really being done in this direction is a matter of congratulation to the Department and the Government it represents. In conclusion, we venture to predict a rapid development when the possibilities of the various kinds of pulp are realized.

The mills will all be limited as to size, but there are a very large number of very attractive openings now awaiting the hand of the legitimate promoter.

EDITORIAL COMMENT

The Dominion Government will introduce a system of parcel post. Do the paper trade realize that this will eventually mean a great thing for them. Mail order houses will increase and enlarge their catalogues; paper for wrapping parcels will be in greater demand.

Prof. Fernow, of the Forestry Department of Toronto University, is somewhat of an iconoclast against preconceived ideas of the inexhaustible wealth of Northern Ontario north of the Height of Land. He traveled, somewhat hurriedly, it is true, along the Transcontinental, and reported that while the country is densely wooded it is by no means all timber. Indeed, from the point of view of sawmill supplies the woods are disappointing. Even for pulpwood the supply is not what the uninitiated suppose and what has been believed to exist. The early explorers traveled by canoes and hence reported only the better developed timber of large-sized white spruce, aspen, balsam, poplar, etc., which skirts the rivers on the well-drained portions in quarter to half-mile belts, without realizing that in the swamps beyond this belt the bulk of the forest growth is black spruce of small size. He speaks more favorably of the agricultural aspects of the country, although even in this respect, he pronounces about 50 per cent. of the land undesirable under present conditions for settlement. Unless great care is taken, therefore, in selecting the sections thrown open for settlement, there is likely to be disappointment. However, it is only fair to state that the Doctor's time for investigation was limited, and that the Ontario Government authorities, who have also examined the region with care, tell a story somewhat different.

NO SUBSTITUTE FOR WOOD.

Mr. Jas. Lawler, Secretary of the Canadian Forestry Association, in an admirable address before the St. Catharines Canadian Club, recently, referred to the pulp and paper mills along the Welland Canal are in earnest of the interest taken by Canadians in forestry matters.

He doubted that there would ever be a substitute for wood in paper making. But, assuming, he said, that a substitute can be found for wood, if we are willing to part with the profits of the lumber trade and its ramifications, there is still a loss in the destruction of the forests of almost equal magnitude. Central Canada is practically without fuel, and it would appear that nature had compensated for this lack by providing an abundance of water power. It is estimated that Canada has 40 per cent. of the water powers of the world, and these powers are most abundant in Welland and vicinity where coal is not found.

The desert making process has gone so far that the Ontario Department of Agriculture has issued a report on the reforestration of waste lands in southern Ontario. The Government has set aside a sum for the purchase of a portion of the lands in Norfolk county, and has now 1,300 acres. In the first place, our forests are not illimitable. In the second place, no substitutes have ever been found for wood. In the third place, supposing a suitable substitute were found, this would not touch the other uses of the forest, equally important with the supply of wood. These uses include the conservation and regulation of the water supply in our streams, with its attendant effect upon water powers and navigation.

THE FORESTRY CAMP OF THE UNIVERSITY OF NEW BRUNSWICK

By R. B. Miller, M.A., M.F., Prof. of Forestry, U.N.B.

The University of New Brunswick, located at Fredericton, New Brunswick, received as an early grant 3,600 acres of woodland at the back of the city; but it was only with the establishment of forestry in the curriculum in 1908 that its value was appreciated, either commercially or as a training ground for forestry students. Prior to that time it lay practically open to all comers, with little provision for protection or economic handling.

Within the last five years, however, there has evolved a decided change in policy. The work of protection against fire and trespass has been placed entirely with the forester, and this year we have been given the opportunity of cutting the college wood after forestry methods and of beginning in a small way a lumbering operation. These things to the busy manager of a large tract would mean little—here in their function of enabling forestry students to acquire familiarity with woods work, they mean very much. The building of a small camp in the woods in any part of New Brunswick by a guide or lumberman is a mere "circumstance"; built in connection with the forestry course, by forestry students, and in our own forest, it is "an event."

It means that with cold weather field work need not be altogether suspended, but that men can still acquire valuable experience in planning roads, bridging brooks, marking timber for cutting, and yarding logs and scaling them for a small winter operation. While this timber is being cut, it will also afford an opportunity for making volume tables for second growth forests, and acquiring more definite knowledge of growth in partially culled forests, which the college lands fairly well typify. Planting operations have not yet been started, but there is a chance to try out planting on the old clearings which can be found in all stages, as well as a chance to study the best methods of brush disposal. It means a center for estimating, for running traverses, sketching topography, and writing such short forest descriptions as might be required by the private owner in gaining information about his property.



Forestry Camp on College Land.

The camp is already proving itself a very valuable addition to the school's equipment. It is used as a meeting and lunching place for the parties of students assigned to different kinds of work throughout the year, and as a sort of ranger's cabin from which trips can be made in connection with the protection of the college lands against trespass. This winter two woodcutters have been located in it while cutting the college wood on an adjoining lot, and as more lumbering is done on the tract, this function as a camp for workmen may gradually increase. During the spring and summer it will be a handy point from which to start a pulp wood operation, since it is surrounded by woods in which the popple is getting over-mature, and very profitable thinnings might be made not only in this but spruce and fire and the product utilized for pulp wood at a profit. Without a camp on the grounds, such operations would be practically impossible.



Interior of Forestry Camp

It was about the middle of October, 1912, that the camp idea took tangible shape, largely through the cooperation of the professor and students of the engineering department. On that Saturday, a party of fifteen or more men chose a site for the camp between two brooks, about three miles from the college, and some began the felling and peeling of trees for its construction. As it was desired to have the inside dimensions sixteen by twenty feet, straight, sound fir logs, varying in size from ten to fourteen inches in diameter breast high, were chosen on a flat near the brook and care taken not to make too heavy a felling in any one place. The logs were cut in two lengths, nineteen and twenty-three feet, so as to allow for a projection at the corners of a foot and a half. Fir logs, when peeled are fairly durable, and after being peeled for a week or two lose considerable weight.

At first, the logs were carried up the slope on the shoulders of the men—no easy task when the logs were heavy and slippery with balsam, but later the packhorse was used for twitching them out of the woods and up to the building site. This saved much hard work, and it was a fortunate discovery that "old Molly" had been a woods horse up-river and could follow along any narrow path swamped out in front of her. Three of the men who had seen lumber camps constructed, then began notching the corners and putting the first logs in place. In order to keep the walls level, some had to be notched very deeply, and in many cases small poles called "drop logs" were put in between the larger ones. The work was done largely

Saturdays, until at Thanksgiving, about the last of October, the camp was three or four logs high.

During the Thanksgiving recess it was decided to push the work more rapidly, and a camp outfit was taken out with a pack-horse, and a temporary camp pitched across the brook from the building, by the au-



A Winter Scene

thor and two of the students, who were very familiar with camp life. To one who has never had the experience of camping in the New Brunswick woods in the cool of October, the operation of making a camp snug for the night is an interesting piece of work and reflects, as nothing else, the skill and experience of the woodsman, be he guide or forester. The "lean-to" tent is the easiest put up and the warmest on frosty nights. With a big fire in front, backed by green logs to reflect the heat upon the occupants, the tent acts as a sort of reflecting oven—providing a good supply of fuel is on hand during the night and someone wakes up periodically to throw on a few sticks. After the tent is pitched and the first meal under way, the next thing is the construction of a bed of boughs—another art in which the woodsman either reveals or betrays himself. If you are a tenderfoot, as I was,—with no guide by Stewart Edward White and other sporting goods experts in camp lore—you will watch this operation with considerable interest.

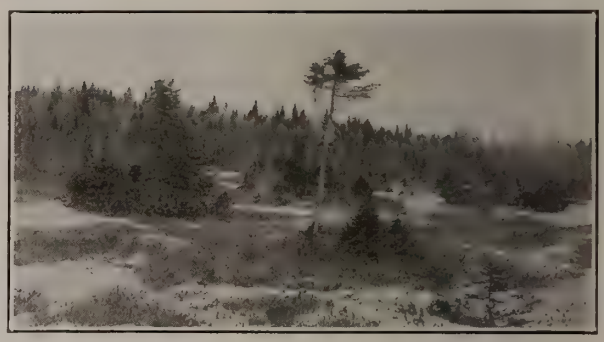
There is secured a pile of balsam boughs—about twice as many as needed. Then you will have about half enough. If you are in the right locality the small



Reproduction on Old Pasture

flat twigs of the ground hemlock are considered superior to balsam. Only the small flat ends of the boughs are taken, and the expert, in making this Ostermoor of the woods, begins at the head of what is to be the bed and sticks them in feather fashion, with the flat ends pointing forward and the twigs shingling over and hiding each other. This has two advantages—your blankets will not work down "against the grain" of the boughs and you will not wake up in the night thinking you are on a corduroy road. After making a bed some seven feet long and of ample width, season the whole with moonlight streaming through the branches and the historic balsamic odor for which you pay a guide nine dollars a day, and you have a couch which will woo Morpheus to a stand-still. I have described the balsam bed at considerable length, because your nights in the woods are more important than the days. The days are full of work and forgetfulness, but the night on an ill-constructed bed of boughs is an unending nightmare.

During this short vacation, the walls of the camp were brought up to a height of about seven feet, which was considered ample. The two top or side logs were of good size and notched for the ends of the rafters. These rafters were of peeled spruce poles, about two and a half feet apart, with their ends spiked to the side logs. The roof was given about a half pitch, so as to shed the snow as much as possible, and the rafters at each end of the building were left six inches apart, so that the short logs which formed the gable could be dropped down between them and spiked together. No openings were left for doors or windows, but such openings were cut out of the logs after the whole thing was completed.



The Barrens on the University Tract

A tight sheathing of hemlock boards was then nailed to the rafters, and over this a layer of three-ply felt roofing was nailed on, the strips running lengthwise, and the edges well tarred. Such a roof is warranted for about ten years, but on account of being inflammable and very hot in summer, it will probably be covered later with cedar shingles. This will outlast the camp, as such camps fall in through the decay of the bottom logs or the undermining by porcupines and other animals.

For the floor, sills of peeled logs were sunk in the ground about two feet apart and a double layer of hemlock boards put down across them. A layer of cheap tarred paper put between the two layers of boards would have added much to the warmth of the floor. The floors of lumber camps here are usually made of round poles, adzed off smooth and leaving large cracks, a convenient receptable for dirt and quids of tobacco. Our camp, in this latter respect, lacks one of the conveniences, but makes up for the defect in other directions.

The roof of the camp was finished just before the first snowfall, and there yet remained the putting in of a door and a window, and the chinking or "stogging" of the cracks, which is a considerable task. Moss was gathered on the high ground for this pur-

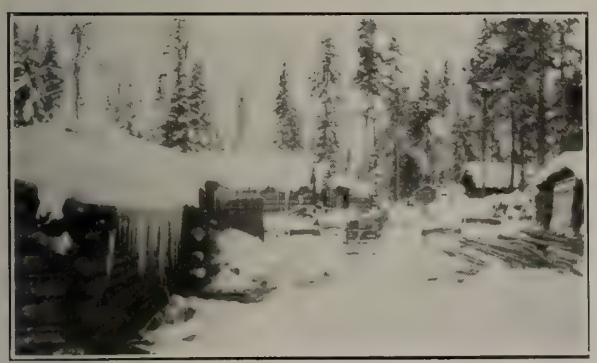
pose and carried to the camp in sacks, an immense quantity being required. This was pounded in between the logs with a tamp from the outside at first, but cold weather setting in, the rest of the chinking was done from the inside with moss, burlap or paper. The second year the moss falls out and much of the work must be repeated if the camp is to be comfortable.



A Sylvan Glade

The completion of the camp owes itself to two hardy spirits—Messrs. Howe and Weston. Just before Christmas they went out, with the old Star stove and a quantity of provisions, to put in the door and the window, and finish the work of "stogging." Just how hard they worked and how much they suffered that afternoon and evening, no one knows. Suffice it to say, that when we opened the door next morning we found them sleeping, and the atmosphere of the lumber camp pervading the place, an air which spelt home. Cold was forever shut out, and in its place was installed good cheer and hospitality, which are abiding.

Such is in brief the history of this camp, which is more than a mere building. There has been built into



Part of the Camp

it, as its walls rose, log upon log, much of self-sacrifice, brotherhood and loyalty to class and school which we believe to be some of the strongest assets in the future. It means that the woods, which was three miles away, has been brought nearer so that we feel its spirit urging us to greater endeavor. It means a rendezvous for congenial spirits, a place where the student and teacher who love the trail and the pack better than the five o'clock tea can slip away and acquire a woods spirit for work and perhaps stumble on to a few original ideas.

Once a year there is held there, along the brook which is too frozen to babble, a gathering whose ardor the frosts and snows of thirty-six below zero cannot chill, because its centre is the spontaneous enthusiasm of youth—we refer to that time-honored feed in January, commonly known as the Forester's "stog" or annual "Hammerfest." What the camp fires at Milford, Pa., were to the Yale students of forestry, it is hoped in a lesser way the annual "Hammerfest" may be to the students in the University of New Brunswick. On this occasion, good fellowship radiates out through the stray chinks, the old Star stove puffs with enthusiasm, and suggestions are made of the greatest value for the improvement of the course and of inspiration to those just entering the profession. To some the camp may mean only a place of recreation and outing; to the majority, we believe, it means a vital part of their training. To a few it may mean the discovery in themselves of a latent liking for the woods which is essential to success in the profession they have chosen. If to these few it results in such a discovery, it has certainly paid very high dividends on the investment.

EDWARD PARTINGTON PULP & PAPER COMPANY, LIMITED.

The machinery of the old St. John Pulp & Paper Company at Mispec, owned by the city of St. John, and formerly operated by Stetson Cutler & Company, has been purchased by Frank H. Davis, of East Cambridge, Mass., for, it is understood, about fifteen thousand dollars. The plant will be completely dismantled. The principals in the case were really the Edward Partington Pulp & Paper Company, Limited, of St. John, who are installing this machinery in their plant at Reversing Falls.

This machinery consists of two small digesters, a pulp drying machine, screens, etc., all of which will be added to the above plant. Beside this they have purchased two second-hand Ruth centrifugals from Frank H. Davis. Their screen room is also equipped with one of the new centrifugals built by the Sherbrooke Machinery Company, which give a high screening capacity on low power consumption.

The plant, as the trade are already aware, is now under the management of Senator Jones, of Bangor, Mr. Clarkson, the former manager, having retired.

The new management is pushing the mill to its fullest capacity and has greatly increased production. Another innovation is the method of shipping the pulp in unwrapped rolls rather than in bundles of square sheets, wrapped in excelsior, as formerly. This effects considerable saving, and if satisfactory to the consumer is a decided advantage to the mill.

Motor trucks have also been added to haul the pulp from the mill to the company's siding at Fairville. It is understood that the present management are working under arrangement of guaranteed results, with Sir Edward Partington, both with the mill and the Gibson limits which he purchased some time ago.

The manufacture of sulphite alcohol in Sweden is increasing but not so rapidly as might be expected. During the first ten months of the year about 1,000,000 gallons of 50 per cent. alcohol was distilled. The uncertainty of production of sulphite alcohol, when manufactured on such a large scale has presented capital from starting new plants. The question of using the sulphite alcohol as fuel for motors is not yet solved.

PAPER MAKING EXPERIMENTS OF THE U.S. DEPARTMENT OF AGRICULTURE

(Specially written for Pulp and Paper Magazine by Raleigh Raines.)

The investigations of the U. S. Department of Agriculture are many and varied and cover almost every phase of production, in efforts to discover not only what nature has so bountifully provided, but to ascertain how and the best way that these products may be utilized and made to serve the individual. Not the least interesting and valuable are the several lines of investigations being conducted in paper making and paper producing materials. Efforts have been long directed toward discovering additional sources from which paper products might be made to yield new industries. From 1897 to 1913 the department records show that consumption of wood for pulp has more than quadrupled. At the beginning of the period cited, three-fourths of all the pulp was spruce and less than one-fourth of it was imported. Now with an annual consumption of five billion cords, 40 per cent. is spruce and about one-half is imported. The price of spruce in the meantime has doubled. Exports of wood pulp have fallen off and imports have increased fourfold. These figures point to the fact that if the United States is to furnish its own supply of wood pulp it must do so from substitutes for spruce. Tests made by the department show that the pulps of commercial value suitable for news and wrapping paper can be made by the sulphite process from eight native woods, several of which grow in abundance in our national forests. Some of these woods are now being used to a limited extent. The department's activities have proven, for instance, that native species, large quantities of which are available and cheap in the Lake States, can be substituted for spruce in the ground wood process for newsprint paper. As a direct result of the Government experiments, mills have begun grinding these woods. Moreover, the department has demonstrated in its paper laboratories that efficiency in pulp making can be raised far beyond what has hitherto been obtained. Experiments have been continued also with good results, in utilizing waste long leaf line for paper making. The Secretary of Agriculture says that in no line of industrial enterprise is there greater opportunity for conservation than in paper making. Not only are large quantities of raw material totally unused, but those which are consumed are not so fashioned that articles of highest utility are produced. National reserves are being sacrificed in the wasteful production of inferior products. American paper is beautiful in appearance, and American shoes are tastefully made, but too frequently both lack durability and utility. Investigations, the Secretary declares, show that it is practicable to reduce the quantity of paper used in this country from 10 to 25 per cent. It has been demonstrated that lighter and thinner papers can be made that are in every way superior to those now generally used. The annual cost of paper can be reduced, according to his belief, by $3,000,000, and the equivalent in raw materials and labor conserved. The department states that its paper laboratory can propose specifications for paper for various purposes and show how the cost of paper may be reduced and the quality improved. The total stands of timber in the 166 national forest reservations, according to the records of the department, is now equivalent to six hundred million feet.

Results from experiments with jack pine and hemlock for ground wood pulp begun last year, have demonstrated conclusively that these two woods can be made into the cheaper grades of paper by practically the same methods used in grinding spruce pulp. Since the results of these tests have become known a number of mills have begun grinding these woods with successful results. A number of other woods which are available for use as wood pulp are now being studied. The investigations of the department showed that the practice among mills manufacturing ground wood pulp differs widely, even when the same species of wood are used and the same products turned out. With this in mind a thorough study was made of the effects of the conditions of the surface of the pulp stone, the pressure with which wood is forced upon the stone, the temperature of grinding, and the physical condition of the wood upon the resultant factors of the horse power which must be applied to the grinder, the amount of pulp produced in twenty-four hours, the horse power consumption per ton of pulp, and the yield and quality of pulp. The results obtained should be of great value to the paper and pulp industry in establishing standards of practice, increasing the efficiency of grinding and reducing the cost of operation. The effect of steaming or boiling wood previous to grinding was determined in part by extended experiments during the past year. It was found that such treatment produces a pulp of greatly increased strength, though of a darker color. It is possible that woods not suitable for grinding in their natural state may be rendered suitable by some preliminary treatment, and that the ground wood pulp thus obtained can be used for tough wrapping papers which now require chemical pulps. In the tests to determine the relative suitability of various species for the production of soda and sulphite pulps, redwood, redwood bark, red fir, lodgepole pine, and sand pine were studied. In addition a small quantity of mill waste from Mexico was tested by request of the Department of State. The yields from the best cooks of these materials in the soda process ranged from 34.9 per cent. for redwood bark to 51.7 for the millwaste, and the sulphite prices from 33 per cent. for the redwood bark to 47.8 for sand pine. The general effect of the work with soda and sulphite pulps from the various woods is seen in the increasing use by pulp mills of species which a few years ago were not thought suitable for the commercial manufacture of paper pulp.

There is undoubtedly reason to believe, that the efficiency of commercial practice, as well as of experimental work by the service, may be increased by a knowledge of the relation of the fundamental cooking conditions in pulp manufacture. The effects of the variable cooking conditions—proportion of caustic soda to weight of wood, causticity of cooking liquor, and temperature and duration of cooking—in the production of soda pulp have been studied, and the relation of these factors to the yield of crude and screened pulps, the consumption of chemicals, and the quality of resultant pulps determined.

CHINA CLAY

(Written specially for the Pulp and Paper Magazine by Jas. G. Ross.)

An industry intimately related to the manufacture of coated papers is the mining and refining of china clay, which is now being carried on in the Province of Quebec about 100 miles north of Montreal at St. Remi d'Amherst.

In a little valley in the Laurentian Hills, surrounding Lac du Sable, in the township of Amherst, after the pine timber had been cut and floated down the Maskinonge River, a settlement of habitants, mostly of the



Plant of Can. China Clay Co. at St. Remi d'Amherst, Que.

family of Tasse, grubbed the stumps and settled down to win a living from the soil lying between the rocky ridges. Some fifteen years ago, in digging wells near their log cabins, the farmers came on a white substance at the rock level under about twelve feet of overburden. The only use they found for it was to mix it with water and whitewash their cabins.

The late Dr. R. W. Ells, of the Geological Survey, in his report on the County of Ottawa in 1901, mentioned the occurrence of kaolin, or china clay, on the farm of Phibbert Tasse, lot 5, range vi, south township of Amherst, County of Ottawa. No further occurrences have yet been reported, though it is to be expected that in other similarly sheltered valleys more deposits may be found. Desultory attempts at prospecting by trenching and pits disclosed china clay in so many places that in 1910 a French engineer was led to report the presence of an immense bed. A shipment of several tons was made to Montreal and an experimental washing trough erected. Samples comparatively free from grit



Washing Plant, Can. China Clay Co., Ltd., St. Remi d'Amherst, Que.

were obtained. Analyses and color tests were made by the Milton Hersey Co., Ltd., and others which proved the kaolin to be of the first grade and equal in color to the best English china clays.

In June, 1911, the writer examined the property and systematic prospecting was commenced. By trenching and drilling in a field several veins were opened up. The formation under some feet of overburden proved to be Laurentian Gneiss, composed almost wholly of a quartzose rock with fine lines of kaolin. These gradually widened until a vein 18 ft. in width was crossed. This vein was evidently a decomposed feldspar and carried only 5 per cent. of quartz grains. Boreholes were sunk in this to a depth of 80 ft. and were still in good clay when stopped. Stripping was also continued along its length. Geologically this occurrence is similar to those in the West of England.

A study was made of the English methods of washing clay. In that country the clay is refined by eleutriation. Great quarries are dug in the hill sides. Sluice boxes are built up to the face of the quarry and the mixed rock and clay shoveled into them. A stream of water carries the clay and finer particles of rock in suspension down the sluice way, the rock particles gradually settling to the bottom as the current becomes slower. The water carrying the clay in suspension discharges into immense vats or ponds. After a time the clay settles to the bottom and the surplus clear water is pumped off. The clay remains in the vats for about six months when it becomes perfectly dry. It is then



China Clay—Opening a New Vein

cut into chunks, carted out and loaded into half-ton casks for shipment. This process makes a good clay, but takes time.

The bulk of the kaolin used in the industries of Europe and America is produced in the West of England, principally in Cornwall. The pits there have been operated for china clay since 1834, and in 1911 had an output of 750,000 tons. As this is only one-fifth of the material dug an immense amount of quarrying must be done to recover this. Very little first-grade china clay is produced in the United States, and that is in the southern part. The clay there is of sedimentary formation and so tinted by iron oxides that it does not command the price of the pure white residual clay of England and Canada.

Clay washing plants in the southern States were visited and the method of extracting water from the clay by means of filter presses was found to be working satisfactorily. As every clay requires a different treatment, experiments were carried on until a system suitable for this clay was devised. The style of plunger, size of screen, quantity of water, length, dimensions and pitch of eleutriation troughs, size of settling tanks, design of filter press, weight of duck, etc., all had to be considered. These features having been decided a plant was designed which proved satisfactory and after the usual delays incident to the establishing of a new industry the Canadian China Clay Co., Ltd., have had the satisfaction of producing a china clay of very superior quality and color free from grit.

An analysis of the clay produced as determined by the Milton Hersey Co., Ltd., is as follows:

	Per cent.
Silica	44.43
Alumina	40.48
Oxide of iron	0.039
Lime	0.24
Magnesia	0.36
Sulphuric anhydride	none
Combined moisture, carbon dioxide and organic mater	14.46
Residue on flotation	trace
	99.989

The residue on flotation is unusually low.

The clay is mined by digging, no drilling or blasting being required, trammed 600 ft. to the plant, washed free from grit and allowed to settle. After the filter presses have extracted the surplus moisture the clay is dried in kilns, pulverized and bagged for shipment.

The plant is situated two miles from St. Remi d'Amherst, and seven miles from Huberdeau Station, the terminus of the Canadian Northern Quebec Railway, 94 miles north of Montreal. Surveys have been made to continue the railway past the property.

China clay or kaolin $A1_2O_3$ $2SrO+2H_2O$ is composed chiefly of kaolinite. It is used largely in the manufacture of porcelain and chinaware. It is also used in the manufacture of high tension electric insulators, electric fittings, door knobs, etc., also in the paper, textile, rubber and paint industries. The largest use in Canada is for coating white paper. As it is pure white in color and does not require such aids as bluing and other bleaching agents used in some imported clays, it finds a ready market here. The washing system devised produces a clay free from grit which will not harm the finest calender rolls.

The following analyses of English clays show that the St. Remi clay compares more than favorably with them in qualities necessary to a good paper clay:

Combined water, volatile	12.27	10.77	11.27	12.79
	1	2	3	4
Moisture, loss at 100° C...	0.30	10.15	7.09	9.10
Combined water, volatile at red heat	12.27	10.77	11.27	12.79
Silica (SiO_2)	47.56	42.72	43.50	41.16
Alumina ($A1_2O_3$)	38.12	33.44	35.48	35.84
Sesquioxide of iron (Fe_2O_3)	0.08	1.04	trace	0.67
Lime (CaO)	0.39	1.61	0.17	0.42
Magnesia (MgO)	0.00	0.16	0.41	0.02
Alkalis	1.28	0.11	2.08	
Gritley flotation test	0.65	6.83		0.10

USE OF MALT EXTRACTS IN PAPER MAKING

Paper makers who use rags have to commence by taking the old starch and fillings out. It has long been the practice to do this by malting the rags. Cross & Bevan, in their "Textbook of Paper-making," state: "It may be noted that the removal of starch from 'rags'—i.e., cuttings from unused cloth, whether bleached or unbleached, is by no means easily accomplished by the ordinary alkali boil. The first effect of the treatment being to geletinise the starch, which then combines with the alkali, the penetration of the rags by the alkaline lye is much impeded. The starch is best attacked by the specific treatment of malting. The rags are boiled with sufficient water to swell the starch; more water is than added to cool the mass to 60 degrees C., an infusion of malt is then added. In one to two hours the hydrolysis of the starch is so far complete that the ordinary boiling may be proceeded with after adding the complement of alkaline lye."

The same authors explain the action of malt on starch as follows:—

"Starch, under the influence of enzyme of malt, termed diastase, yields to the series of dextrines, amylins, malto-dextrins, maltose, and finally dextrose. To convey some idea of the complications presented by the series, it may be noted that it is necessary to expand the original starch molecule to 5 $(C_{12}H_{20}O_{10})_{20}$. The first effect of hydrolysis is to split this into a resistant dextrin of the formula $(_{12}H_{20}O_{10})$ and a group of amyline representing the remaining four-fifths of the molecule which pass through further hydration stages represented by such formulae as $(C_{12}H_{20}O_{10})n + H_{20}O$ maltose group being successfully formed and split off. Yeast, again, secretes an enzyme termed invertase, which hydrates the crystallisable but still complex sugars, such as maltose and cane sugar (both $C_{12}H_{20}O_{10}$) to the simple hexose $C_6H_{12}O_6$.

This may be explained in a simpler manner. Extract of malt contains chemically active substances known as "enzymes." These bodies are not in the true sense ferments; they are not living organisms, but are products of the chemical processes of the living cell, though their chemical activity survives the life of the cell and is separated from it.

Each enzyme appears to act on a very limited group of chemical compounds; thus amylase, the enzyme of malt, hydrolyzes starch, but does not hydrolyze cellulose. By reason of this selective action diastastic preparations may be employed for the removal of sizing from textile goods, as they cause the complete solution and removal of the size without in any manner attacking the fibre.

Enzymes are soluble in water, though they are easily coagulated by precipitates, and they are also readily absorbed from solution by the textile fibres, apparently adhering to them with great tenacity, as it is very difficult to remove the enzyme by washing.

Enzymes are very sensitive to heat. At 32 degrees F. they have no action whatever. With rising temper-

ature, however, their activity increases in efficiency up to a maximum point, which varies with different kinds of enzymes. When this temperature of maximum efficiency is exceeded, the activity of the enzyme again decreases, until at 190 to 212 degrees F. it becomes entirely suspended.

The presence of various chemical substances may influence the activity of the enzyme. Acids, alkalies, and salts usually exert a retarding or even a destroying effect. Other chemical bodies, such, for example, as asparagin, promote and stimulate the activity of the enzyme.

The process of making malt from barley is a well-known one. The grain is first carefully cleaned, and is then subjected to a steeping process. When the grain has absorbed the proper amount of water it is allowed to germinate. This furnishes the malt, which is then dried and serves as the primary material for the production of diastase.

Malt diastase is not a simple uniform body, but consists of a number of different enzymes. The development of one or the other specific enzyme may be favored or retarded according to the conditions under which the malting process is conducted. One enzyme in malt is peptose, which is capable of converting albuminous substances into soluble bodies (peptones.) Another enzyme is pectase, which acts specifically on pectin bodies, converting them into soluble products.

The action of diastase on starch is a hydrolyzing one; the starch takes up water, and is first converted into soluble starch, then into dextrin, and finally into maltose. The efficiency of the diastase is greatly dependent on the temperature; it increases with rise of temperature up to about 155 degrees F., then decreases, until at about 190 degrees F. all activity ceases.

Malt has bee nemployed by paper-makers and in the textile industries for a long time. For instance, take calico printing. The textile printer has to add a thickening to his color paste, otherwise it would spread. This thickening, having served its purpose, must be removed and this is done by malting.

It is only within the last few years, however, that the chemical knowledge of malt preparations has been so developed as to permit of the isolation and separation of the different effective enzymes in the malt extract. By special malting processes it is now possible to separate amylase and pectase almost quantitatively from other constituents, and to obtain them in an easily soluble form so as to be conveniently used in the textile trades. The first product of this character was manufactured by the Diamalt Works, of Vienna, in 1903, and was put on the market under the name of Diastafor. The British Malt Producers Company, of Bermondsey, who have paid great attention to the matter, have also brought out a most excellent product under the name of Brimal. This is now a favorite extract with launderers, who use it in their "breakdown" —i.e., in getting the old starch out of the linen in the least damaging manner, and also in the textile trades. Here it is used both destructively and constructively, that is to say, it is employed both to get rid of unnecessary starch, and also to prepare starch dressings, and it must be remembered that all textile finishing mixtures have a basis of starch.

The particular applications of Brimal in paper-mak-ing and manufacturing are in two well-defined directions:—

1. If rags are the raw material it is, of course, necessary to remove the starch and loading materials, and incidentally the dirt, before beating. Although caustic soda or lime is often employed to effect the removal of starch and incrustating matters, it is the practice in many mills to substitute the old method by the improved treatment of malting, which immediately reduces all starchy matter in the rag to a liquid state, and naturally the dirt falls out more readily. This newer process is not only much quicker, but it so thoroughly cleanses and softens the stock that the bleaching liquor is better absorbed, and ultimately a closer and more evenly felted sheet is obtained without the slightest tendering action on the rags.

As we have pointed out, Cross & Bevan recommend making as the easiest and most complete method. The use of specially concentrated Brimal simplifies the process much further.

Rags treated in the rotary or stationary boiler with one to two pounds of Brimal per 100 gallons of water for 15 to 20 minutes, at 140 to 150 degrees F. (not boiled), with no other addition, will be completely desized and freed from dirt. Any steeping action will do in vats or boilers in the heat named. The strength of a bath of greater volume will be well maintained by the addition of 8 ounces Brimal to each succeeding 100 gallons. A bath of 1,200 gallons would therefore require only 7 lbs.

Brimal has a strong solvent action on the pectinous matter which esparto contains so largely, and is a very effective agent in the scouring treatment of jute. Less chlorine is required, and a much shorter treatment. Jute may be given a bath at 150 degrees F., similar to rags, and left stacked if convenient, the longer the better, then washed if necessary.

There is not the slightest tendering action. The Brimal bath must not be boiled; 140 degrees to 150 degrees F. is the most advantageous temperature. Straw is made more flexible owing to the softening action of Brimal on the highly-polished fibre.

2. The incorporation of starch for the production of highly surfaced papers is simple, if the starch is dextrinised with Brimal.

A starch mixing including Brimal in the proportion of 2 lbs. to the 100 lbs. of starch (on the dry weight of starch) will, upon heating to 150 degrees F., gelatinise to a clear fluid, with a content of dextrine sufficient to produce a high and even surface without the addition of any gums or glazing agents.

A similarly prepared starch mixing can, if necessary, be easily incorporated as a valuable strengthening to the pulp paste. The peculiar resiliency resulting in the starch permits of its mining in the paste without the fear of its drying out in undesirable patches, or of its being squeezed out of the paste under the rollers. As a toughening agent, such a dextrinised starch is inexpensive.

The writer has watched with interest the progress of these special malt extracts and their gradually developing employment in the textile industries. He is proud to be able to be the first to call the attention of paper-makers to an important medium for the improvement of their processes.

Mr. F. Christie, of the Forestry Department, University of Toronto, is lecturing at Guelph, taking up the work of Prof. Zavitz, recently appointed Ontario Commissioner of Forestry. Mr. Christie is a native of Amherst, N.S., and holds a high reputation as a clever forester.

BY-PRODUCTS FROM SODA PULP LIQUOR

E. L. Rinman, of Harnas has invented a process of making sodium bicarbonate and organic substances from soda pulp waste liquor.

When the so-called black liquors from soda pulp mills have been freed, by treating the same with carbonic acid or otherwise, from those organic substances which are precipitated by carbonic acid, they contain sodium oxide combined with carbonic acid or weaker acids, and also combined with acetic acid, formic acid, resinous acids and other organic acids, says the inventor.

The object of the invention is to treat the said black liquors further in such a manner as to recover directly the largest possible quantity of sodium in the form of bicarbonate of soda (soda lye for boiling cellulose substances) and, if desired, at the same time obtain the acetic acid, the formic acid, the resinous acids and other organic acids in a practically suitable form.

The invention consists chiefly in directly subjecting the black liquor, freed in any suitable manner, wholly or to a considerable part, from those organic substances which are precipitated by carbonic acid, and, if desired, in a concentrated form, to the well-known ammonia soda process. By this means I obtain bicarbonate of soda and, if lime be used for driving off ammonia from the waste liquor, I also obtain calcium salts, of acetic, formic, resinous and other organic acids. In fact, by treating the black liquor with ammonia and carbonic acid at a suitable temperature and a suitable concentration of sodium salts, dissolved therein, bicarbonate of soda will be precipitated even more fully than when a mere solution of sodium chloride is treated, due to the fact that a larger quantity of ammonium salts may be dissolved when several acids with more easily soluble ammonium salts are present than when the solution contains only ammonium chloride.

In order that my invention may be fully understood, I will now describe a particular example thereof, viz., the treatment of a black liquor containing sodium chloride, said liquor having first been substantially freed by carbonic acid (bicarbonate of soda) from organic substances and reduced by evaporation to a suitable concentration. The black liquor thus treated contains Na_2O combined with organic acids, hydrochloric acid and carbon dioxide, the concentration being preferably such that one litre of liquor contains about 100 grammes of Na_2O combined with organic acids, about 80 grammes of Na_2O combined with hydrochloric acid and about 30 grammes of Na_2O combined with carbon dioxide. This liquor is further treated in ordinary saturating apparatus with ammonia and carbon dioxide, at a temperature of 20 deg. to 40 deg. Centigrade, until about 60 to 70 per cent. of the quantity of sodium oxide has been precipitated in the form of bicarbonate of soda, whereupon the precipitate is separated in suitable filtering apparatus from the dark colored mother liquor. For the saturation with carbon dioxide I preferably employ the escape gases from lime burning furnaces (containing about 25 to 30 per cent. of carbon dioxide), in which case the saturation will generally require a time of 12 to 24 hours (more or less according to the concentration of the carbon dioxide).

The mother liquor from the precipitate contains hydrochloric acid, acetic acid, formic acid, resinous acids and oxy-acids soluble in water, all combined with ammonia and sodium. From this mother liquor not only ammonia, but also the organic acids should be recovered. This is effected in the following manner: First free ammonia and ammonia combined with carbonic acid, and, possibly, other weak acids, such as resinous acids, are driven off; in the latter case the said resinous acids are precipitated. Thereupon a strong base, such as lime, is added, in a quantity somewhat larger than that calculated from the formula. By this means the ammonia is disengaged, while the acids produce lime salts. Resinous substances previously precipitated may be removed, or not, before the lime is added. The ammonia is thereupon separated from the solution by heating same, during a sufficiently long time, in a suitable apparatus. As the liquid is very liable to skim, care should be taken to prevent this by any suitable means, such as agitators, addition of paraffin, or the like.

If the resinous acids have not been separated before, the lime added to the lye produces an easily filterable and washable fine grained precipitate of calcium resinates insoluble in water, whereas the acetic acid and the formic acid as well as the oxyacids form soluble calcium salts. If the said lye is to be utilized this may be performed in the following way: The calcium resinate is separated from the solution by known methods of filtration or pressing. The calcium resinate thus obtained may be treated in any suitable manner, for instance, by dry distillation, in the presence of steam or not. The solution obtained from the said processes (the filtrate) now contains calcium salts of acetic acid, formic acid, other organic acids, and, possibly, hydrochloric acid and also contains sodium chloride. If the organic acids in solution are to be utilized, the solution is concentrated as hereinafter set forth. Acetate and formate of lime together with sodium chloride may be crystallized out from the solution concentrated to the consistency of syrup. The main quantity of the latter salt may be crystallized out without considerable quantities of organic salts being mixed therewith, and it may be used in the process instead of pure sodium chloride, especially if the solution has first ben freed, for instance, by precipitation with oxy-acids the calcium salts of which are precipitable with alcohol. The lime salts thus separated may be utilized in any suitable way.

Another way of proceeding consists in evaporating the whole solution to dryness, and, after adding a strong acid, distilling off acetic acid and formic acid in usual manner. The residue of distillation may thereupon be subjected to dry distillation. It is obvious that the whole solution, reduced to dryness, may be immediately exposed to dry distillation, in the presence of superheated steam or not, in which case acetone and other substances are obtained. The acetate and the formate of lime separated may be treated in known manner for recovering acetic acid and formic acid. The other lime salts may be subjected to dry distillation, in the presence of steam or not, or they may be treated otherwise, if desired.

A further way of proceeding consists of disengaging the organic acids by stronger acids. Among the latter I preferably first employ sulphurous acid, by which about half the whole quantity of lime is precipitated as insoluble calcium sulphite; the reaction is best performed at an increased temperature, in order to prevent the formation of acid calcium sulphite. Hereby the acetic acid is disengaged and may be directly distilled off, if desired. When the acetic acid has been distilled

off, the formic acid may be disengaged by a stronger acid, such as sulphuric acid, and distilled off.

A still further way of proceeding consists in first removing calcium sulphite and thereupon adding a sufficient quantity of sulphuric acid so that formic acid or all the organic acids are at once disengaged. Thereupon the mixture of acetic acid and formic acid is distilled off. Gypsum which is precipitated may be separated before or after the distillation. The oxy-acids may thereupon be directly separated from the mass of salts by filtration or pressing with or without the addition of water or other suitable solvent. The syrup thus obtained may be utilized by methods of dry distillation. If desired, the calcium salts of oxy-acids may be subjected to such a dry distillation before the formic acid is distilled off.

Obviously, care should be taken that in precipitating bicarbonate of soda the lye contains a sufficient quantity of sodium chloride. It is obvious that in using the process for regenerating carbonate of soda from black liquors it should at the same time be directly used on new quantities of sodium chloride in order at the same time to produce a cheap solution of carbonate of soda for covering all losses of sodium oxide in boiling cellulose substances. The said addition of sodium chloride is to be effected in such manner that the quantity of sodium equivalent to the desired quantity of soda amounts to about 60 per cent. of the total percentage of sodium of the lye. On account thereof, the addition is to be calculated in the usual manner in each separate case.

In all operations performed in this process of regenerating sodium oxide from the black liquor or in simultaneously recovering sodium oxide from sodium chloride care should be taken that the solution containing acetic acid and formic acid is not unnecessarily diluted, since in such case the price of recovering the said acids will obviously be raised.

If desired, the precipitate of bicarbonate of soda may be freed from ammonium salts by washing same with black liquors (treated with carbonic acid, or not) from which bicarbonate is to be precipitated with ammonia and carbonic acid. The precipitate of bicarbonate of soda may also be used, either directly or after imperfect washing, for producing new quantities of boiling lye. Obviously, however, the ammonia contained in the said precipitate should be recovered. If the bicarbonate of soda is to be used for producing a solution of carbonate of soda to be causticized for forming boiling lye, carbonic acid disengaged is suitably recovered in order to be again used in the process. If this carbonic acid gas contains ammonia, it may, obviously, be employed with the same result.

The Vera Chemical Company is erecting a factory at Burlington, Ont., for the manufacture of sizing for writing paper. The building is 152 feet by 62, four storeys high.

Dr. J. A. Bancroft, of McGill University, Montreal, who was in charge of a survey party sent out by the Quebec Government to study the natural resources of the territory south of James Bay, states that in the basins of the Nottaway, Harrinaw, and Bell Rivers, there is a great wealth of pulp wood, including black and white sprue, balsam and jack pine. There are also numerous water powers, some of them quite large. At Iroquois chute the entire Nottaway River takes a drop of 35 feet.

THE LARGEST CONCRETE BEATER TUBS.

At the new plant of the Milton Leatherboard Co., Milton, N.H., what are said to be the largest concrete beater tubs in the world have just been completed by the Aberthaw Construction Co., of Boston, Mass., who are executing the entire contract for this work. The accompanying illustration, which shows three of the four tubs built, will give a good idea as to their unusually large size. The over-all dimensions of each are 26 ft. 8 in. long by 13 ft. 2 in. wide, making them larger than any wooden tubs which have heretofore been built.



Reinforced concrete has been used exclusively in the buildings of the Milton Leatherboard Co. The main building is 185 ft. by 70 ft., with two storeys and basement. Adjoining is a raw stock room 120 ft. by 40 ft. and 30 ft. high.

The Aberthaw Construction Co., Boston, has executed the work in accordance with design of I. W. Jones, engineer, of Milton, N.H.

McLEOD PULP COMPANY.

The McLeod Pulp Company, of Milton, N.S., the only mill in that province with a paper machine, is contemplating extensive additions in the form of sulphite and an additional machine.

Mr. J. D. McLeod, the president, of the firm of J. B. McCurdy & Company, brokers, Halifax, is a man of the keepest business perceptions. The amalgamation of these mills with the Halifax Tramways and Robert interests in the Gaspereaux valley is reported a dead issue. The above company will rather pursue a policy of independent development of their exceptional advantages. A deep-sea shipping port open the year round, three mills now in good running order, the best of labor and ideal manufacturing conditions, with unlimited power, give them the most valuable opening in this province.

The manager, Mr. Downer, is one of the most active men in the industry, and has made a most creditable showing in putting a small old mill on a modern and successful operating basis. In the immediate vicinity of the mill he has a possible total development of 25,000 horse-power, which will gradually be utilized in extensions. The mill caters almost entirely to the English market, where this wood board is deserved popular.

We congratulate the management of so young a firm on their rapid progress and bespeak for them the greatest success in their future ventures.

MANUFACTURE OF PARAFFIN PAPER

By H. Lhomme and M. Argy.

(Specially translated for Pulp and Paper Magazine.)

The idea of making paper impermeable by impregnating it is certainly not new, because tar or oil papers have been manufactured for a long time. The preparing of these papers, especially the oil paper, is rather expensive, and requires much space and labor and many mechanical devices. Besides, these papers on account of their taste and smell or their inconvenient soiling of delicate objects with which they come in contact, are exempted from a great number of uses and especially from wrapping aliments and confectionery. The oil paper, besides, is difficult and takes long to dry, as the oil only dries by means of a kind of oxidation.

Other papers, mostly used for lining boxes, transported by water and for wrapping certain products sensitive to humidity, are made by impregnating with a kind of grease, very thick at ordinary temperatures and obtained in the same way as paraffin from American petroleum. In order that a paper thus prepared may not soil objects with which it comes in contact, it is necessary to eliminate at high temperature the excess of grease by means of an energetic pressure between rolls. The paper ought afterwards to be aerated for a suitable time.

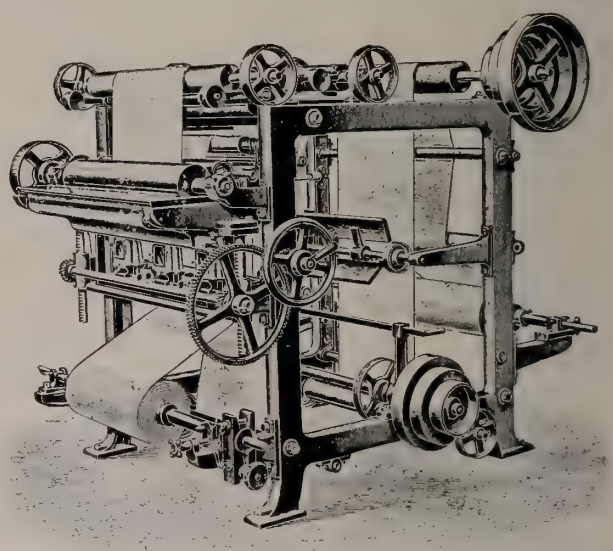
It is only lately that fatty substances, solid at ordinary temperatures and colorless and oderless, such as waxes and paraffins, have been utilized for making papers impermeable. Wax was first used, but its high price has caused it to be abandoned for the paraffin, a mixture of solid hydro-carbons, obtained by treating the heavy oils from a slow distillation at high temperature of American petroleum.

Paraffin possesses the same qualities as wax for making paper impermeable and is cheaper. There are several different grades of paraffin in the market, more or less hard, and which have a melting point of 41′-64′C., depending upon their purity. The paraffin used always ought to be rather hard, so that the impregnated sheets do not stick together when cut. It must be odorless, especially if the paper to be impregnated is used for wrapping footstuffs. For impregnating papers used for wrapping less sensitive objects, inferior grades of paraffin still containing a little oil are used.

The applications of paraffin papers are numerous: wrapping of aliments, especially concentrated products sold in solid form and in prepared portions, chocolate, candy, etc., in one word, everything which must be preserved in a durable way against the action of the air or the humidity or protected against drying. Paraffin paper is valuable for confectionery, because it is an ideal protection against dust, so injurious to health and because it does not adhere to the products wrapped up. On account of its multiplied uses the consumption of this paper has increased considerably during the last years and is still growing. Its use for reproduction apparatus, called Cyclostyles, Mimeographs, etc., may also be mentioned.

Thick paraffin papers are used for several purposes. In certain countries, fruit boxes are made from this material; it is also used for dynamite cartridges.

The paper was originally prepared by hand by rubbing on the paraffin ,while the paper was placed on a heated plate. This method was much too slow and the high price prevented the paper from obtaining any great consumption. Paraffin paper has been made by mechanical means for about twenty years. The accompanying figure, represents a paraffining machine built by A. Koebig, Dresden. It has a box containing molten paraffin through which the paper passes, when paper



Machine for Paraffening Paper

paraffined on both sides is made, which is the most usual. This box is heated by gas or steam so that the temperature of the paraffin bath is close to 100 deg. C. The paper leaving the bath carries with it a quantity of paraffin in excess, greater in degree with the speed of the machine. In the first machines constructed this excess was scraped off by thin steel scrapers. Three such scrapers were used on each side of the paper. This system had the inconvenience of retaining particles of grit and other impurities contained in the paraffin or projecting from the surface of the paper. This grit was retained under the scrapers and caused streaks in the paper, of which a certain quantity became spoiled. This refuse paper would sometimes amount to 20 per cent. of the total production, depending upon the velocity at which the machine was run.

The paper is then cooled off while passing over a series of other rolls. A small ventilator accelerates the cooling. The paraffin has then become sufficiently hard so that the paper can be rolled. With this system with scrapers, thin paper strongly calendered and weighing 17 to 18 grammes per square metre, absorbs about 30 per cent. of its weight of paraffin. With new machines and suitable paper it is possible to use only 3.5 to 4 grammes of paraffin per square metre.

Lately the excess of paraffin has been squeezed out by rubber rolls, which cause much less refuse and reduce the quantity of paraffin absorbed. It may be remarked, that all qualities of rubber are not suitable for

these rolls on account of the elevated temperature to which they are exposed. Even the special qualities used don't have more than a rather limited existence, but the extra expense caused is insignificant compared with the reduction of refuse. With up-to-date machines a production of up to 15,000′ per hour of thin and carefully made paper has been attained. The machines are easily handled; a boy is enough for each machine; their price is low and they don't require much space.

The machine can also be managed so that the paraffin is only applied to one side. The consumption of paraffin may then be reduced to two grammes per square metre. The paper paraffined on only one side is, however, always cloudy and has fewer applications. Thin paraffined papers are seldom made wider than one metre, but thicker grades occur in widths of 1.40 metres and more.

Under such conditions the question arises, why have not more mills for paraffin papers been started, as the manufacture is so simple and a small capital is enough. The most important hindrance to the starting of new mills is the difficulty of finding a paper with suitable qualities as raw material. The thin grades, of which the greatest part of the consumption consists, require tissue paper of 17-18 grammes per square metre, well manufactured and very regular, delivered carefully rolled and equally stretched on both sides. If one side is more stretched than the other, diagonal folds are formed, which are visible in the paper in the form of white streaks, which make the paper unsalable. The tissue paper ought to be calendered in order to absorb less paraffin. It is mostly made by mills turning out cigarette paper, and several paraffin their paper themselves, only selling the excess of their production. Very few other mills are able to manufacture thin supercalendered papers; the authors have seen several projects for paraffining mills abandoned on account of the difficulty of procuring a regular delivery of the required raw paper.

The machine described above makes paper paraffined uniformly on its whole surface. This paper is often before being paraffined, covered with illustrations, etc., in one or more colors, printed with aniline colors on a small machine with rubber rolls, having the illustrations in relief.

Papers are also manufactured which are only paraffined on part of their surface, following bands placed at certain intervals. Such, for instance, are the cigarette papers called "Anbres." After cutting these paraffined bands from the end of the cigarette; they prevent it sticking to the smoker's lips. The work of paraffining is done either in sheets; by hand or by machine, or continuously and then only by machine. In case of continuous paraffining, the paraffined bands ought to be transverse to the paper, so that after cutting the cigarette is rolled transverse to the length of the machine in which direction the paper is more easily rolled. The quantity of paraffin applied to the paper ought to be so small that the thickness of the paper is not increased on the paraffined places, especially close beside the bands. It is a very delicate work and requires the greatest care. When the sheets are piled on top of each other so that the paraffined bands exactly coincide, the pile must not be thicker, where the bands are. The speed of these machines is much lower than for the common paraffining machine and does not exceed 40-60′ per minute.—La Papeterie.

CORRESPONDENCE

STATUS OF THE PULP AND PAPER INDUSTRY.

The Editor Pulp and Paper Magazine:

The rapid strides which the pulp and paper industry has made in Canada during the past two years has caused certain authorities of some eminence to advise caution in the launching of further projects, though on the whole there has been a noticeable tendency on the part of the issuers of these warnings to assume an uncompromising attitude indicating that they have not given the question as much thought or study as it would warrant. Their warnings, however, have been issued with a concern chiefly in connection with the probable temporary unbalancing of the pulp and paper trade as a result of the enormous increase of output in the operation of the new Canadian mills.

That the country is capable of supplying an even much greater output is not questioned for a moment, for it is now fairly well understood that the pulp and paper production of Eastern Canada can continue to expand to an enormous extent for many years to come without endangering the capital forest wealth of the country. I calculate that Quebec Province alone can supply five million tons of paper annually from the increment of her forests. Other opinions greatly increase that estimate.

In order to understand the situation, some knowledge of the world's consumption of paper must be obtained and in this connection these is probably no better authority to be consulted than Mr. Franz Krawany, of Germany, who some time ago estimated that the world's paper consumption is over eight million tons a year, of which six and a half million tons is made from wood pulp, and the balance from other materials. It is estimated by the same authority that by 1920 the world's consumption of paper will be ten million tons a year, an increase of 25 per cent. in ten years, or 2½ per cent. a year, which means an increase in demand of 200,000 tons a year, or 660 tons daily per year.

Where shall this increased production come from?

There are few places outside of Canada where conditions will permit of large expansion, but, on the contrary, it is more reasonable to expect a marked diminuation of output from many of the older pulp and paper manufacturing centres in the United States, which, at present, import raw material from Canada for a production of nearly one million tons a year. This exporting of raw material from Canada certainly cannot increase, but must rather diminish, not alone on account of tariff restrictions, but owing to the well-known conditions which place Canadian manufacturers in a much more favorable position for competition in United States and other foreign markets, so that whether tariff regulations favor the Canadian producer or not eventually (and that is soon) consumers must come to Canada to buy.

Here are the words of Mr. Geo. C. Sherman, Secretary and Treasurer of the St. Regis Paper Co., and a gentleman who knows what he is talking about, as anyone can learn if he cares to investigate. Mr. Sherman says: "It will be only a short time before the Canadian manufacturers will be able to dictate prices to American publishers, if they are not even now in a position to do so. All paper manufacturers with whom I have talked agreed that the production of newsprint and other papers made largely of ground wood will dimin-

ish in the United States and grow across the border. Unless we United States manufacturers are placed in a position where we can secure our raw material we will be driven from the field."

Now, with an annual increase of 200,000 tons of paper in the markets of the world the question to be answered is, how much of this demand can Canada safely assume as her share in competition with the rest of the world?

The chief competing countries in the pulp and paper trade are United States, Scandinavia, Germany, Russia, Newfoundland, France, England, and a few smaller producers. In how many of the foregoing can expansion of the paper production take place, and to what extent?

In the older and well settled European countries no expansion of the wood product may be anticipated, and as wood pulp has for years gradually been displacing other materials, it is likely to continue to do so, or, at least, to the extent of very nearly accounting for the increase of the world's consumption, which is 660 tons per day per annum as estimated by Mr. Krawany and verified by the writer by various comparisons.

Scandinavia is now manufacturing pulp and paper very nearly to the limit of her resources and producing a pulp inferior to the Canadian article. Russia is the only probable future competitor of any large account, but her forests are to a considerable extent inaccessible and must remain so for many more years, during which period the Canadian industry can assume the profitable burden of supplying almost all the increasing demand.

Considering, in addition to the foregoing arguments, the just alarm which has stirred the world of late in regard to the growing scarcity of wood as a result of forest depletion, and accepting the recognized fact that Canadian spruce and other conifers are the most economical fibrous product for the manufacture of paper, it must be admitted that Canada, by the natural conditions which favor her in regard to forests and water powers, shall and must assume the greatest portion or practically all of the annual increase of the world's paper production. Therefore, an increase of about 600 tons per day per annum can be handled by Canadian mills.

The flurry in the establishing of new paper mills in this country during the year 1912, accounted for an increase of 1,000 tons per day, besides about 350 tons of pulp per day.

This increase is considerably in excess of the logical increment, but 1913 and 1914 will not see anything like such another increase, so that even eliminating the probabilities of decreasing production in the United States and other countries, the Canadian mills by the end of 1912 were only abreast of the times. Besides it is well to remember that the stock of paper carried by large publishers everywhere rarely, if ever, exceeds an eight days' supply.

As it takes two or three years to launch and put into operation a large pulp or paper mill, no alarm need be felt if new enterprises are launched during the next two years. The writer is indebted to Mr. John Forman, of Montreal, for his kindness in permitting the use of his private fyles and reference library for verifying some of the above statistics.

R. O. SWEEZEY,

Chief Engineer and Mgr. Montreal Engineering Co., Montreal.

EXPORTS OF CANADIAN PAPER TO AUSTRALIA

Second in importance (coming next to agricultural implements) in Canadian exports to Australia is the item of printing paper of which the importations into the Commonwealth have remained, practically, at the same figures in 1910 and 1911. The trade returns disclose the fact that Canadian printing paper is not maintaining the position held in former years. The reason is doubtless capable of explanation in the industry. More profitable domestic business and the demand in markets where there may be less competition than in Australia are likely factors in the results arrived at. Several of the largest Canadian paper mills have experienced and capable representation in Australia and the decline cannot be attributed to any disadvantage in that respect. As printing paper is duty free, the competition is upon an equal footing, but, in quoting upon c.i.f. and e. basis, continental shippers (at least) likely obtain a more favorable freight rate. The imports from Norway and Sweden increased from £75,618 in 1909 to £120,444 in 1911, whereas the imports from Canada in the same period declined by £2,896, although the total imports expanded by £137,017. The trend of the trade is disclosed in the following comparative schedule in which the values from the principal sources of supply are enumerated:

1909.

Total Australian imports of printing (news) paper	£589,398
From Canada	136,099
From United States	98,343
From United Kingdom	233,990
From Germany	33,022
From Norway	50,228
From Sweden	25,390

1910.

Total Australian imports of printing (news) paper	731,196
From Canada	158,624
From United States	111,038
From United Kingdom	303,541
From Germany	33,866
From Norway	58,049
From Sweden	46,285

1911.

Total Australian imports of printing (news) paper	726,415
From Canada	133,203
From United States	106,611
From United Kingdom	306,630
From Germany	44,203
From Norway	69,260
From Sweden	51,184

Canadian paper boards are being introduced, and, while the figures are yet diminutive, the outlook for increased returns is promising. Wrapping paper to the value of over £170,000 was imported in 1911, of which Sweden, Germany and Norway contributed to the extent of £152,000, and Canada £206 only. Some manufacturers of wrapping and cartridge papers have recently received from the Canadian Trade Commissioner at Melbourne samples and particulars concerning competitive prices, which is encouraging evidence of interest being aroused in the trade.

HYDROLYSIS OF CELLULOSE AND LIGNO-CELLULOSE*

By F. E. Gallagher and I. L. Pearl.

When wood or sawdust is cooked at high pressures with dilute acids there is formed a considerable amount of fermentable sugar, mainly dextrose. Previous investigators have differed in their opinions as to the source of the sugar, some maintaining that it is formed from the cellulose and others from the lignin. The purpose of the experiments here described is to supply additional data that will contribute to the solution of the problem.

All of the cooks referred to in this paper were made on long-leaf pine sawdust screened through a ten-mesh sieve. As hydrolysing agent 1 per cent. H_2SO_4, figured on the dry weight of the sawdust, was used. Three parts of liquor, by weight, were used for each part of sawdust. The cook was carried out in a porcelain lined covered dish suspended over water in an autoclave. A maximum pressure of 135 pounds (nine atmospheres) was maintained for thirty minutes. The total duration of the cook, including heating up and pressure relief periods, was about seventy minutes. The cooked sawdust was completely extracted by water, evaporated to about 11 degrees. Brix (1.045 Sp. gr.) and fermented.

TABLE NO. 1.

Sugars from Pure Cellulose Material.

	Total Extract Per Cent.	Reducing Material, Per Cent.	Fermentable Sugars, Per Cent.	Ratio Fermentable Sugars, Total Solids.
1a Bleached cotton	3.1	1.6	1.4	.44
1b Bleached cotton (residue from 1a re-cooked)	4.5	2.8	2.5	.55
2a Bleached soda wood pulp	17.7	16.0	6.3	.36
2b Bleached soda wood pulp (residue from 2a re-cooked)	7.5	4.3	3.8	.51

Note.—To avoid burning, cottons were cooked at 100 pounds instead of 135 pounds pressure.

The percentages of water soluble and copper reducing materials was determined on portions of the evaporated extract.

A series of cooks was made to determine the extent to which fairly pure forms of cellulose could be converted into sugars by this procedure. The character of these experiments and the results will be clear from Table No. 1.

These results would indicate that pure cellulose can be converted into fermentable sugars. Cotton cellulose does not give as high a sugar yield as the wood celluloses under the hydrolysing conditions used. Each of the celluloses is capable of yielding a further amount of sugars on re-cooking, and the extract from the second cook is the more fermentable. Contrary to the data of some previous investigators, the cellulose gave lower yields of soluble material and fermentable sugars than wood. The ratio of fermentable sugars to the total soluble material is about the same as for extracts from wood cooks.

At ordinary temperatures chlorine vigorously attacks the lignin portion of wood, but has little effect on the cellulose portion. This is used as the basis of several analytical methods for the determination of cellulose. We have found that chlorine, when substituted for sulphuric acid in a high pressure cook with sawdust, gave a very fair yield of soluble and fermentable material, from which it might be concluded that the sugars were formed from the lignin portion of the wood. The following data, however, indicate that under the cooking conditions used the chlorine will attack pure cellulose, converting it into fermentable sugar. In these experiments 0.2 per cent. chlorine, in the form of chlorine water, was used. The cooking method was in other respects similar to that already described.

Since the almost pure cellulose yields fermentable sugars, but in lesser amount than the ligno cellulose material, it would appear that both the cellulose and the lignin can be converted into sugar, at least with this special reagent.

The most conclusive data bearing on the questions as to whether the cellulose or lignin portions of the wood yield sugar on hydrolysis are furnished by a series of experiments in which the change in the composition of the wood on cooking with acid has been determined. The cellulose in the original sawdust, in the residue from the first cook and in the residue from the re-cook, was determined by the Dean and Tower modification of the Cross and Bevan method. The results of the cooks and analyses are given in Table No. 3.

If in the first cook the lignin alone had been attacked the residue would have contained 70 per cent. of cellulose. If the cellulose alone had been attacked, the residue would have contained 41 per cent. of cellulose. After the second cook the sawdust residue was in finely divided physical condition and noticeably carbonized. A great deal of reliance cannot therefore be attached

TABLE NO. 2.

Chlorine as Hydrolysing Agent.

Material.	Total Extract.	Reducing Substances.	Fermentable Sugars.	Rat. Fer. Sug. Total Extract.
Sawdust	26.7	18.4	...	...
Sulphite wood pulp	13.5	10.7	8.0	.59

*Read before the Eighth International Congress of Applied Chemistry, New York.

to the last cellulose determination. For similar reasons it did not appear to be practicable to carry out cellulose determination on the final residue.

This experiment indicates that the cellulose and the lignin go into solution, on high temperature hydrolysis, wood extract as for the extracts from the pure cellulose, we conclude that both the cellulose and lignin can be equally converted into dextrose. The conversion of cellulose and wood by chlorine water is also in accord with this view.

TABLE NO. 3.

Effect of Hydrolysis on Cellulose Content of Wood.

Material.	Ferment. Total Extract, Per Cent.	Reducing Material, Per Cent.	Sugars, Per Cent.	Ratio Fer. Sug., Total Ext.	Cellulose. Before Cooking. Per Cent.	After Cooking. Per Cent.
a. Sawdust (longleaf pine) ..	22.0	19.3	11.8	.53	54.0	52.0
b. Residue from (a)	6.3	4.7	3.0	.47	52.0	42.0
c. Residue from (b)	2.8	1.7	1.6	.57	...	...

in about the same ratio as they exist in the wood. Since the ratio of

$$\frac{\text{Fermentable sugars}}{\text{Total extract}}$$

is about the same for the

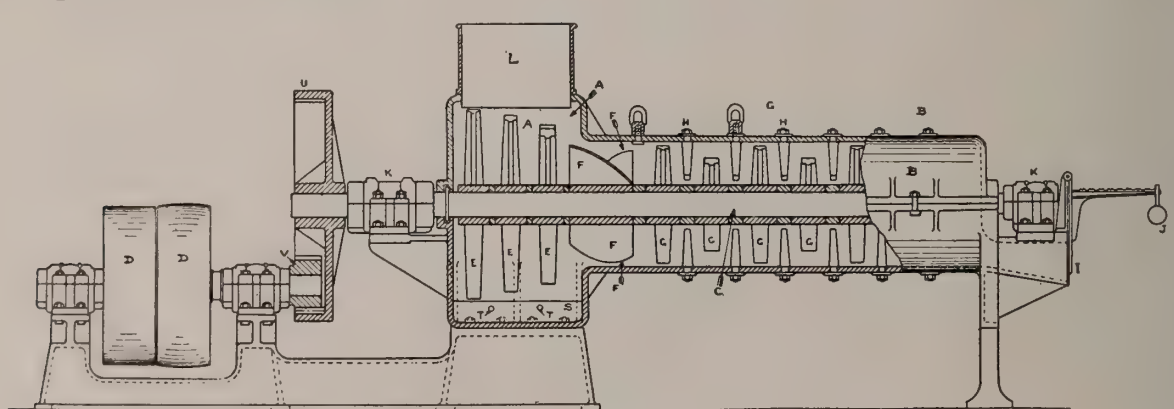
Under the conditions of high temperature hydrolysis with dilute acid, the cellulose and the lignin do not react as chemical individuals, but rather as a chemical compound, ligno cellulose.

THE LANNOYE PULPER

This pulper, consists of a combination of two cylindrical receptacles of which the larger one A—or soaking chamber, supports a hopper L. In the lower part of this chamber is provided a second precipitation chamber S having a cleaning door, in which are admitted the steam and water at openings TT.

The second cylinder B, of smaller diameter, is the pressure chamber. At one end is located the outlet, the passage through which is controlled by a sluice I, with counterweight J. This cylinder is made of two parts bolted together, the upper part being easily removable for cleansing.

A shaft C, revolving in two bearings KK and driven by internal gear driving arrangement with cut spur



pinion gear, passes centrally through the two chambers. On the said shaft are fixed in the soaking chamber, the three armed mixing wheels EE; between the two chambers, a screw F; and in the pressure chamber a number of four armed mixing wheels GG.

The arms are made of a special shape to prevent any useless mechanical strain and to avoid the clogging of strings, fibre, etc.

Between each wheel is fastened in the upper and lower part of the cylinder a series of teeth HH, of curved shape, corresponding with the shape of the arms.

For hard and parchment-like substances, a greater pressure is required than for cardboard, printers waste, unsized pulp, etc., which only require a small pressure, in this case the amount of pulp delivered is nearly unlimited.

Sometimes, small quantities of air enter with the material, which if allowed to remain in the mass would produce a reduction of the reciprocal action of the fibres; in order to avoid this small apertures are provided in the upper part of cylinder B.

It is said that no existing machine has ever given such excellent results as the pulper described, either as to the amount of stuff delivered or quality of the pulp.

When comparing the pulper with the kollergangs, beaters or other pulping devices, the following advantages are evident:

1. The amount delivered is three times as great as any other pulper.

2. The power required to drive it is much reduced. In actual practice the pulper has treated as much as 750 to 1,400 pounds old paper per hour with 20 horse power.

3. Economy of labor. One workman is sufficient for working the apparatus.

4. Economy of installation. This apparatus costs less than a pair of kollergangs or beaters, and may be fixed on any existing floor.

5. Great reduction of cost of maintenance. The repairs and maintenance of existing pulping devices are very great and the effect in this pulper has been to entirely avoid them. The patent pulper gives complete satisfaction in this respect and the manufacturer has no hesitation in guaranteeing, for one year, the maintenance of the apparatus. There are no hidden joints, no jamming, no wear and tear unless it be the natural wear of the two bearings.

6. Complete absence of noise, vibration and shock, which are injurious to both the apparatus and its foundations.

7. Very little lubrication is required.

8. The drive of the apparatus is very simple and free from danger, and may be entrusted to any workman, however inexperienced.

9. Most perfect results, leaving the fibres undamaged, while it is claimed that kollergangs, owing to the pressure and friction they exert, destroy the structure of the cellulose fibres in an undesirable manner and are not under control, and beaters cut and tear the fibres. When treating broke and paper stock in this pulper far better results are obtained, the paper being stronger, and of better appearance, owing to the fibres being perfectly separated.

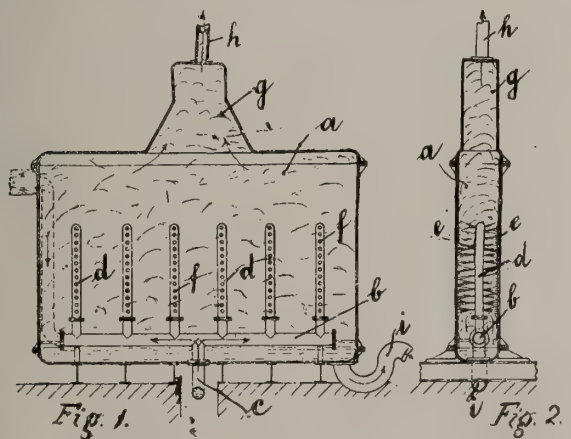
10. The foreign substances which are always to be found in broke, or old papers, leave the apparatus without having been crushed. Their separation from the raw material before entering the pulper is nearly impossible, but it becomes very easy when the material has been worked into half stuff. When the half stuff leaves the pulper it is easy to pick out any foreign substance such as parchment, india rubber, linen, gum, orange peel, wood splinters, coal and other hard substances, which would be crushed in kollergangs or beaters, thereby spoiling the half stuff and producing paper of an inferior quality.

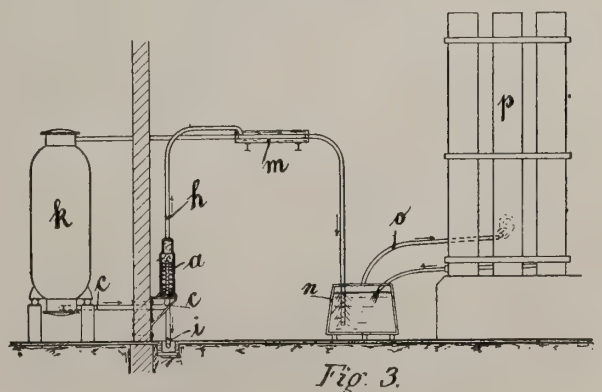
METHOD OF RE-CLAIMING SULPHUROUS ACID FROM SULPHITE WASTE LYES

By a method patented in Germany by H. Achonbach, the hot liquor running off from the digester is atomized by its own pressure in a container, so that the sulphurous acid is seperated off and can be let out. The sulphurous acid can be used to prepare fresh acid, while the liquor, now free from acid, is let out from the bottom of the container.

The new device consists of a container built in the waste liquor conduit from the digester and which has an atomizing device for the liquor and a vent for gas.

Fig. (1) shows the atomizing device in vertical longtitudinal section. Fig. (2) in cross section and Fig. (3) the gas vent.





The liquor is let out after the digesting process is ended under a pressure of 15-30 lbs. with a temperature of 120-130°C. from the digester K (Fig. 3) through pipe C to the container N and is there atomized. The sulphurous acid is then separated out and is conducted through pipe H and the cooler M to the acid-tank N where it is used for the preparing or strengthening of the fresh acid. The gases not absorbed by the acid in container N are conducted through pipe O to the tower P where they are completely absorbed. The liquor freed from acid flows from the container A through pipe I and is let out in the river mixed with other waste liquors from the mill.

The atomizing of the liquor takes place in the narrow container A near the bottom of which is placed the pipe B (Fig. 1 and 2) to which the waste liquor flows from the digester through pipe C.

The atomizers are connected with the distribution pipe B and consist of pipes D closed in the upper end and having many small spray holes F opposite the walls E of the container A. The liquor is pressed out through the holes F and is being atomized when striking the walls E. The sulphurous acid which is then separated out fills the upper part of the container A goes into the gas collector G and is let out through pipe H. The liquor freed from acid flows down the walls E, is collected on the bottom of container A and let out through pipe I.

The gas obtained can be dried by letting it come in contact with the admission pipe for the hot liquors.

Claims:

Claims:

1. A method to reclaim the sulphurous acid from sulphite waste liquors depending upon the atomizing of the waste liquor by its own pressure, while being let out from the digester into a container, the sulphurous acid then separating out being again absorbed.

2. A method to conduct the reclaiming process according to claim (1), an atomizing device (BDF) being coupled in in the waste liquor conduit C from the digester and which is surrounded by a container A, having a gas vent H and a discharge pipe I for liquor. —Papierzeitung.

MANUFACTURE OF BOARD.

In the course of time five different modes of making board have arisen, viz.:

1. On the Fourdrinier machine,
2. With two wire tables arranged one over the other,
3. By the co-operation of two Fourdrinier machines,
4. By pasting together webs of paper on the glueing machine,
5. By the cylinder machine having several cylinders.

In board for writing purposes, beautiful look-through and homogeneous surface are specially required, and in printing board (for picture postcards, etc.) as little transparency as possible and a certain strength and stiffness are desired in addition. The pulp is, therefore, selected accordingly. Long pulp readily gives a cloudy look-through and uneven surface, whilst short pulp yields beautiful look-through and closed surface, but the strength is diminished. These contradictions are negatived by mixing long and short fibres. For example, rag half-stuff is used to which short fine fibres, such as straw, asp or beech chemical pulp are added. Hard sulphite pulp in less suitable for board owing to its tendency to being beaten greasy. When the apparatus is available each pulp should be beaten by itself. If the pulp is obtained too greasy this can be remedied by introducing steam into the stuff; 25 degrees C should not, however, be exceeded because otherwise the look-through and sizing suffer. A primary condition when making board is a suitable length of the wire part; the thicker the board, the longer must be the wire. For obtaining a beautiful look-through three gates are absolutely necessary. A descending wire must be avoided, but on the other hand a moderately rising wire should be worked with. The dilution of the pulp must be kept within certain limits. The apron should end just before the last rule. Surface and look-through are improved considerably by 1-2 dandy-rolls. 4—5 suction boxes should be employed, whose action should increase in stages. The thicker the board and the greasier the pulp, the more must the top couch-roll be shifted towards the breast-roll. The jacket for the couch-roll should be of short hairs and thick. A second shower pipe should be arranged above the top couch-roll accordingly this pipe will be used only for preventing the pulp rising at the top couch-roll. Drying must take place gradually, because otherwise the surface of the board is roughened. On the paper machine only slight moistening is used, but then the board is moistened more on the moistening machine and left at rest for 5—6 days before the calendering. The upper wire approaches the lower close before the coucher and returns above after it has delivered its web to the lower wire. The upper wire must always supply thicker paper than the lower, because otherwise folds are formed and the paper is crushed; to make board of 360 g/sq. m., the upper web should be about 240, and the lower 120 g/sq. m. The upper wire is always started working first and then pulp is gradually supplied to the lower wire until the prescribed thickness is obtained. The upper wire wears more quickly than the lower. In order to avoid the formation of folds and crushing of the web in the first press, it is absolutely necessary to place a light roller directly before the entrance to the press. The first group of cylinders should be heated only with waste steam. In order to improve the surface a calender of Tittel's system which can be heated should be placed between the individual cylinders, before mentioned. For making boards smooth on one side, a cylinder of 2 m. diameter having a pressing contrivance should be provided. The one-sided glaze aids in lending the board a certain stiffness. The employment of two wires also enables the manufacture of two-colored board, which is used in large quantities for many purposes. For example, the Indian Government employs two-colored board of 198 g/sq. m. consisting of 20 per cent. unbleached sulphite pulp, 65 per cent. mechanical wood pulp and 15 per cent. pure white waste, 25 kg. kaolin and 5 kg. aniline. Cloth mills employ so-called advertisement board of 180—190 g/q. m. consisting of 10 per cent. unbleached sulphite pulp, 35 per cent. mechanical wood pulp, 60 per cent. waste, 20 per cent. kaolin. A board consisting of 3 layers, light brown on the one side and white on the other and weighing 320 g/sq. m. is made as follows: The brown side is made on the lower wire, the insertion on the upper wire, and the white side is supplied by an Odo cylinder machine arranged at the upper wet part. In this manner a three-fold board for button factories weighing 280 g/sq. m. is made and also a postcard board having an insertion containing wood and outside layers free from wood.—Der Papier Fabrikant.

THE TRUTH ABOUT FOREST RESERVES.

The former erroneous impression that forest reserves are areas set apart by the government to be reserved from use and development, is giving way to the correct view that they are for the general use of the public.

The Dominion Forestry Branch is desirous of spreading this idea abroad, and with this end in view has inaugurated the policy of surveying summer resort lots around convenient lakes in forest reserves. These lots are of two kinds, viz., building lots and camping lots, so that the demands of both cottagers and campers may be met. Such lots are leased to the public for a term of years at a very nominal figure.

It is hoped that in this way a start may be made in bringing to the public a realization of the opportunities and advantages which the reservation of these great areas of the public domain affords the country at large.

A good example of such a resort is seen in British Columbia, where a site has been laid out at Trout Lake, in the Long Lake forest reserve. This reserve is situated in the Kamloops district of the Railway Belt.

Trout Lake, at an altitude of 4,100 feet, is an ideal retreat for the residents of the towns and cities of the Dry Belt. Here they may escape the oppressive heat and drought of the summer season, and at the same time enjoy some of the finest fishing to be had anywhere in Canada. Already many people have secured building lots, and it is expected that in a very short time a large and flourishing summer colony will be established at this point.

A NEW PULP STRAINER

Lucien Marguet, of Riouperoux, Isere, France, has invented a method of construction and means of operation of pulp-straining drums for paper making machines.

The drums used in connection with pulp straining in paper making machines, says the inventor, usually have two movements, one a reciprocating motion which imparts to the drum a certain amount of displacement in the vertical direction, and the other in conjunction with the first, imparts a very slow rotation to the drum. Several means have already been employed to obtain these results, and this invention has for its object to provide a a new construction of the parts more simple and efficient than has hitherto been accomplished, by means of which the same results can be attained.

This invention consists more particularly in providing a single or multiple crank fixed on the driving shaft over which passes or pass the actuating belt or belts from the drum the said cranks giving on its or their rotation one or more vertical movements, together with a very slow rotation to said drum on each revolution of the main shaft.

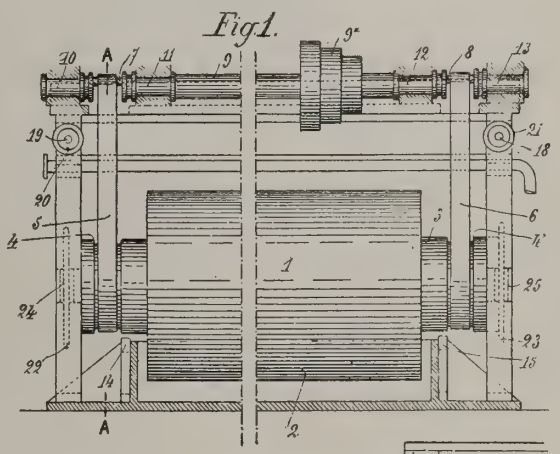
Fig. 1 is a front view of a pulp straining drum of an ordinary paper machine fitted with these improvements showing a simple crank constructed according to this invention; Fig. 2 is a sectional side view taken on line A—A of Fig. 1; Fig. 3 is a part sectional plan view of the journal of the said drum taken on line B—B of Fig. 2; Fig. 4 is an enlarged detail view showing a modification in which is employed a double crank.

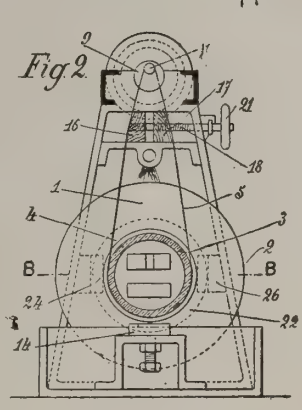
On referring to the drawings, 1 shows the pulp straining drum of the paper making machine constructed in the usual manner having an envelope 2 supported at its extremities by two metallic collars 3 and 3′ each provided with a flanged portion 4 and 4′ forming pulleys which each receive an endless belt 5 and 6. Each of these endless belts pass over a crank 7 and 8 said cranks being made preferably integral with the shaft 8, said shaft having four bearings 10, 11, 12, 13.

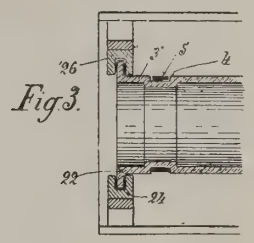
Each revolution of the shaft 9 is communicated by a main belt passing over a stepped pulley 9 allowing varying speeds to be given to the crank shaft 9 giving motion to the belts 5 and 6, and, consequently, the drum receives a vertical movement and at the same time a slow rotation continuous or intermittent each time that the crank 7 or 8 revolve.

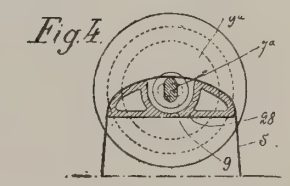
In order to render the shaking effect, due to reciprocation more easy, two adjustable pieces 14 and 15 are provided on each side of the drum. These abutments can be regulated vertically so as to vary the extent of the chocks as well as for taking up the elongation or extension of the belts 5 and 6. It is clear for the rotation of the drum as slow as required, it is only necessary to adjust the nuts on the abutments 14 and 15 (Fig. 2) so that the endless belts only lift the drum when the crank is at the limit of its eccentricity; this movement can naturally be varied within its limits either way. Other means are equally provided for taking up the elongation in the length of the belts 5 and 6 which consist of two specially shaped pieces of wood or other suitable material 16 and 17 see Fig. 2, which act as guides for the belts. The said members can be regulated in distance one from the other by means of screws oppositely threaded governed by the hand wheels 20 and 21. It is equally possible to take up the elongation of the belts by lifting simultaneously the four bearing 10, 11, 12, 13 by means of the screws, or by any other suitable mechanical equivalent. Both extremities of the drum are provided with flanges or collars 22 and 23 which engage in the grooves in the brackets 24, 25, 26 and 27, see Fig. 3, in order to prevent the drum 1 from receiving axial displacement.

In the form of construction shown in Fig. 4 the crank 7 has a double throw and is arranged cam fashion the excentric parts being preferably diametrically opposed. The belt 5 passes over a rounded member 28 having a central cavity through which passes the main shaft 9, and this member 28 is disposed in such a way that the double crank 7 does not touch the belt when it occupies the position shown in dotted lines in the drawings. It will be understood that the crank 7 instead of being double, may be triple, quadruple or consist of any number, in which case the number of shocks given to the drum at each revolution of the main shaft will correspond thereto. Further, the throws of the crank 7 can be calculated in such manner that the pulp straining drum receives at each turn of the shaft vertical movements of variable amplitude.









It will be readily understood that at each half, third, or quarter turn of the shaft 9 one of the bosses of the cam shaped crank 7 (either double or multiple) lifts the belt 5 at the same time that it communcates a movement of rotation, this movement being transmitted to the drum, two or a greater number of times for each complete revolution of the shaft 9, in this way the speed of the main shaft can be diminished for any given number of shocks, the power necessary for its rotation being less, the wear of the belts being diminished which is a desirable feature over known construction.

ARGUMENT OF THE PULP IMPORTERS

The Association of Wood Pulp Importers presented to the Ways and Means Committee the following brief which outlined the tariff situation and the changes that they advocate:

Paper manufacturing is one of the leading industries of the United States, there being 763 plants now in operation engaged in this industry. The raw material entering largely into the manufacture of paper is chemical wood pulp, generally known as sulphite, sulphate or kraft pulp. The present duty on this material is one-sixth of a cent. per pound dry weight if unbleached, and one-quarter of a cent per pound dry weight if bleached. There is, however, this exception to be noted: If imported from Canada, when manufactured from wood on the exportation of which there is no export restriction, it is now admitted free of duty in accordance with Section 2 of the Canadian Reciprocity Act, which became effective July 26, 1911.

Of the 763 paper mills now in operation in the United States, 538 paper mills use chemical pulp in their manufacture. There are in this country ninety-four mills manufacturing chemical pulps, having a maximum capacity of 3,363 tons of unbleached pulp per day and 1,155 tons of bleached pulp per day. Of these mills only eighteen are engaged in the sale of pulp; the other seventy-six pulp mills have paper mills also, which use up their entire production of pulp. Of the eighteen mills engaged in the sale of pulp, twelve have paper mills in connection with their pulp mills, and sell only such portions of their product of pulp as is in excess of their own requirements at their paper mills, so there are really only six pulp mills in this country actually engaged in the exclusive manufacture and sale of their product. These six mills have a maximum daily capacity of 635 tons, of which 430 tons is bleached pulp and 205 tons unbleached pulp.

It is impossible for our domestic mills to supply sufficient pulp for our paper mills, and on account of the increased manufacture and consumption of paper in this country the importations of chemical pulp have largely increased.

No new pulp mills have been erected in this country since some years owing to the scarcity of suitable woodlands in the United States. Existing woodlands are now owned or controlled largely by present pulp and paper mill owners, or lumber concerns, making it difficult for prospective pulp manufacturers to hope for any opportunity of profitable competition.

We respectfully refer to the brief read before, and filed with this committee at the hearing, November 21, 1908, and printed in Tariff Hearings, Sixtieth Congress, 1908-9, page 6021. The conditions of the industry therein described are still prevailing. The cost of the production of pulp in Europe has greatly increased in the past five years owing to the increased scarcity and resulting enhanced cost of wood and higher cost of labor, coal, ocean freights, etc.

Foreign pulps command a higher price than domestic on account of their higher cost and quality. Under the present tariff the foreign manufacturer of unbleached chemical pulp is under an additional cost of about $10 per ton and of bleached pulp about $12 per ton on account of charges for packing, foreign inland freight, ocean freight, importer's profit and duty, of which the domestic manufacturer has the advantage; consequently the foreign pulp must be, and is, sold at a higher price than the domestic, and the market to-day for foreign pulps rules from $3 to $4 per ton higher than for domestic. This comparatively small difference is made possible only by the economies of manufacture which are taken advantage of so generally in Europe, and so generally neglected in this country. For instance, with the exception of one mill here, all mills in this country burn sulphur to generate their sulphurous acid gases used in cooking the pulp, but abroad, the mills generally burn pyrites to get their sulphurous acid gases, resulting in a saving in cost of about $2 per ton of pulp.

In spite of the reluctance of the American manufacturer of pulp to use the most modern methods, no chemical pulp mill has failed in business since the last sixteen years.

During the year 1912 some 285,000 tons of unbleached pulp, upon which about $900,000 duty has been paid, were imported, and during the same period about 78,000 tons of bleached pulp, subject to a duty of about $390,000, were imported, thus netting to the Government a revenue of over one and a quarter million dollars for the year. From these amounts of importations 46,000 tons of unbleached pulp—about one-sixth of the quantity—came from Canada, and from this about one-half was admitted free of duty. Of the bleached pulp importations some 6,000 tons—about one-thirteenth of the quantity imported—came from Canada all free of duty.

Any additional burdens placed upon pulp may possibly be to the advantage of the very few pulp mills who manufacture their product for sale, but it would add a heavy load to the nearly 400 paper manufacturers in this country who are obliged to buy their pulp, and it would place them at a great disadvantage with the other paper mills having their own chemical pulp mills.

We further desire to point out to your honorable body the importance of retaining the tariff on wood pulp, whatever it may be, on a specific basis instead of on an ad valorem basis. The value of pulp, whether bleached or unbleached, from the lowest grade to the highest, does not vary in the average more than 15 per cent., and in the majority of cases the variation in market values does not exceed 5 per cent. An ad valorem duty gives rise to differences in opinion as to market values, and exposes the importer to severe penalties for possible unintentional undervaluations, and gives the opportunity to unscrupulous importers to undervalue importations and thus cause unfair competition to others engaged in this industry.

We venture the opinion that the operation of the Tariff Act on the wood pulp schedule on a specific basis, has been satisfactory both to the Government and to the importer, and we must strongly urge upon you not to make any change in this respect.

We have tried to make our brief short, and have not gone into any exhaustive length on any of the points to which your attention is called. However, for the purpose of bringing the matter still more clearly before you, we make herewith resume of the questions involved:

1st.—The tariff on pulp should not be advanced for reasons mentioned.

2nd.—European pulp should be placed on the same basis as Canadian pulps.

3rd.—The tariff, if continued, should be continued on a specific basis and not on an ad valorem basis.

PULP AND PAPER NEWS

The Dominion Printing & Loose Leaf Company will put up a factory in Ottawa.

* * * *

E. S. Munroe, of the Wilson-Munroe Company, paper dealers, Toronto, is spending the winter in California.

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Mr. S. Downer, manager of McLeod Pulp Company, Milltown, N.S., is recovering from an attack of pneumonia and is again at his office.

* * * *

Mr. J. G. Sutherland, sales manager of the Spanish Pulp & Paper Company, has been appointed assistant to the general manager, Mr. T. H. Watson.

* * * *

The Brompton Pulp & Paper Company has purchased the timber limits of J. E. Laberge near Lambton, Que. The 5,000 acres cost in the vicinity of $35,000.

* * * *

Our readers will sympathize with Mr. W. H. Rowley, president of the E. B. Eddy Co., Hull, in the loss of his mother, who died last month at the age of 78.

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The Capital Wire Cloth & Manufacturing Company's plant at Ottawa is now in operation and receiving so many orders that it contemplates doubling the size of its plant next summer.

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The statement is made that probably half of the pulp recently manufactured by the Anglo-Newfoundland Development Co. was made from burnt wood, which is usually looked upon as valueless.

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Soyer Kookera Bag, Limited, Montreal, which makes special bags for cooking purposes, is issuing $15,000 common stock. E. H. Bradley, of Montreal, is managing director, and Percy A. Bradley, secretary.

* * * *

The foundations and sidewalks are now completed for the Donnaconna Paper Co., at Cap Sante, a few miles from Quebec. The mill will be 550 feet by 125 feet, mostly two storeys high, of brick and cement. There will be a 1250-foot concrete dam.

* * * *

The International Paper Company have elected Philip T. Dodge president, to succeed Alonzo N. Burbank, who was elected chairman of the board. Mr. Dodge is president of the Mergenthaler Linotype Company and has for some time past been a director.

* * * *

Bahr Bros. Manufacturing Company, Marion, Ind., have been granted a Canadian patent (No. 144297) on their manganese steel Jordan engine linings. They are made of a metal which is claimed to be frictionless, saves power, is slow to wear out and will not tear out.

* * * *

The Campbell Lumber Company, Weymouth, N.S., are installing additions to the barker room. Most of their wood supply for this season has been purchased from local farmers, owing to their mill being burned, and their own logging operations being cut down.

* * * *

J. J. Steele, of Vancouver, represents an eastern syndicate which is making application for the right to use 500 inches of water from the Spallumcheen river near Enderby, B.C., the purpose being to erect pulp and paper mills. There is said to be a large supply of suitable wood in the district.

The St. Croix Paper Company, Hartville, N.S., are placing a lot of old papers in their mill, and it is rumored they will soon recommence operations. This mill was first built by Mr. Ellershausan, a German, and has since had a varied career. The paper made was a poor quality and the mill operation, which has been intermittent, was not of the best.

* * * *

Part of the machinery of the Morrison Cove, N.S., barking mill, namely, 15 barkers, 3 boilers, and cutting up gear, is being sent to Gaspe, where the Dalhousie Lumber Company, a subsidiary of the International Paper Company, is erecting a barking mill. Mr. Brankley purposes to run the remaining half of the Morrison Cove machinery next summer instead of operating the Richards mill day and night, as was done last summer.

* * * *

The Flax Decorticating Company, Rosetown, Sask., A. Vam Allen manager, has erected a plant in the centre of the Goose Lake district. The plant will use that portion of the flax formerly regarded as waste in the manufacture of a high grade paper pulp. The fibre can be converted into pulp at a moderate cost, per ton and a large English firm are said to have guaranteed to take all the product which the new factory can turn out.

* * * *

While four employees in the rag room of the St. Lawrence Paper Company, at Milles Roches, were engaged in their occupation of sorting paper, rags, etc., they came across one lot which contained what seemed and proved to be diamonds. The waste paper, which is shipped to the factory in bales, arrived from New York. The find consisted of a few rings and a large number of unset stones, valued at several thousand dollars.

* * * *

Mr. J. R. Booth, Ottawa, has begun an action before Mr. Justice Cassels, against the Crown, in which he alleges he has suffered damage by reason of the failure of the Department of Indian Affairs for Canada to grant a renewal of a license to cut timber upon Indian Reserve No. 10, on the northerly side of Lake Nipissing since the year 1909. Mr. Booth's original license had been granted on 5th October, 1891, and renewed from year to year up to that time.

* * * *

The Alberta & Saskatchewan Straw Paper Products Company, Limited, is making progress with its factory building at Medicine Hat. The new company, which will utilize the straw of Alberta wheat for making building paper, boxes and other materials, is already assured of a good market for its products, and will open a new source of income for the farmers of Alberta. This factory is expected to be in operation this year and steps will afterwards be taken to erect branch plants at Calgary, Red Deer, Moose Jaw and other points.

* * * *

The St. George Pulp & Paper Company, St. George, N.B., are not planning to erect a bag mill, as was rumored in the daily press, on the nearby acquired property of the granite works. This was purchased as a safeguard in case of future extensions, though no immediate development is in mind. Their entire output of ground wood is shipped to the paper mill at Norwalk, Conn., during open season, which this year was later

than ever. Direct saltwater shipping between their pulp mill in Canada and the paper mill at Norwalk give them decided advantages.

* * * *

Steady progress is being made making plans for the large pulp and paper mills at Grand Falls, N.B. It is expected that the engineers will present alternative plans for bringing the water power to the turbines, which will convert it into electricity. One plan calls for the excavation of a tunnel through the solid rock twenty-five feet in diameter and nearly 1,000 yards in length. The other plan is for a canal of almost equal length. Both plans have their advantages, but there is a difference of almost a million dollars in the cost. As soon as the board of directors decide which plan to adopt, it is believed the work of construction will be commenced.

* * * *

The Dominion Pulp Co., Chatham, are completing a magnifient new office building at the mill. The new log handling system, and boiler room recently installed are giving the greatest satisfaction. The increased production of the mill is making heavy demands on their stock of wood, but this deficiency has been arranged for by the purchase of a number of small holdings up the Miramichi River. Wood from these now comes to Chatham on cars, and is hauled across the ice to the mill on the opposite bank. Mr. Stevens, the manager, is at present in England on business. In this connection there are local rumors of doubling the plant, and of other extensive enlargements. A new digester room is one of the improvements under consideration.

NEW INCORPORATIONS.

Canadian Jewish Times, Montreal. To publish newspapers and other printed matter. Sam. W. Jacobs and A. Rives Hall, Montreal.

* * * *

Canadian Public Utilities, Limited, Montreal. To develop water powers and sell same to mills, etc. C. H. Cahan, Jr., O. B. MacCallum, Montreal.

* * * *

Grenville Board & Paper Company, Thorold, Ont., manufacturers of wall board, etc., are authorized to increase their capital from $75,000 to $150,000.

* * * *

Consolidated Agency, Limited, Toronto, capital, $200,000. To print and publish newspapers, magazines, etc., carry on business as printers, bookbinders, etc. C. H. C. Leggott and B. Webster, Toronto.

* * * *

R. G. McLean, Limited, Toronto, capital, $200,000. To publish newspapers, books, magazines, and do business as printers, stationers, bookbinders, publishers, etc. J. F. MacGregor, W. H. Walter, and J. E. Riley, Toronto.

* * * *

Tregillus-Thompson, Limited, Calgary, is authorized to do business in British Columbia, with offices at Victoria, and C. X. Thompson, attorney, capital, $100,000. To compile and publish city and business directories, print newspapers, circulars, etc.

* * * *

The Fred W. Halls Paper Company, Limited, Toronto, capital, $40,000. To manufacture and deal in paper, paper board, paper boxes, pails, bags, envelopes, calendars labels and paper novelties of all kinds. F. W., H. H., and Wm. Halls, Toronto.

WESTERN RAILWAY RATES ON PAPER.

The Dominion Railway Commission has been enquiring into the complaints which for a long time past have been made by pulp and paper shippers as to the higher rates they have to pay in the West compared with the East, and with American shippers between corresponding points in the Western States. It is claimed that for long distances the Canadian shipper has to pay from 6 to 32 cents more per hundred pounds than does the American. Some comparative rates are given below, showing cost on carload lots on the C. P. R. from Fort William, Ont., to Alberta and Saskatchewan points, and on the Great Northern from St. Paul, Minn., to corresponding points in Montana:—

Paper, board, box binders, chip, memo, paper stock, pulp straw or tar—St. Paul to Hinsdale, Mont., 816 miles G. N. R. rate 67 cents, and C. P. R. rate from Fort William to Moose Jaw, Sask., 819 miles, 71 cents; to Harlem, Mont., 901 miles, American rate 67 cents, Canadian rate to Saskatoon, Sask., 899 miles, 78 cents; American rate to Yantic, Mont., 930 miles, 67 cents, Canadian rate to Swift Current, Sask., 929 miles, 80 cents; American rate to Cut Bank, Mont., 1,072 miles, 70 cents, Canadian rate to Medicine Hat Alta., 1,077 miles, 90 cents; American rate to Butte, Mont., 1,237 miles, 70 cents, Canadian rate to Calgary, Alta., 1,257 miles, $1.02; American rate to Anaconda, Mont., 1,263 miles, 70 cents, Canadian rate to Edmonton, Alta., 1,265 miles, $1.02.

Paper, building and roofing and news print—American rate to Hinsdale, 67 cents, Canadian rate to Moose Jaw, 71 cents; to Harlem, Mont., 67 cents, to Saskatoon, Sask., 78 cents; to Yantic, Mont., 67 cents, to Swift Current 80 cents; to Cut Bank, Mont., 70 cents, to Medicine Hat, 90 cents; to Butte, Mont., 70 cents, to Calgary, Alta., $1.02; to Anaconda, 70 cents, to Edmonton, $1.02. Differences in favor of the American shipper are from 4 to 32 cents.

Paper wrapping, posters and tailors' patterns—American rate to Hinsdale, 67 cents, Canadian rate to Moose Jaw, 71 cents; rate to Harlem, 67 cents, to Saskatoon, 78 cents; rate to Yantic, 67 cents, Swift Current, 80 cents; rate to Cut Bank, 70 cents, to Medicine Hat, 90 cents; rate to Butte, 70 cents, to Calgary, Alta., $1.02; rate to Anaconda, 70 cents, to Edmonton, $1.02. Differences in favor of the American shipper are from 4 to 32 cents.

NEW BRUNSWICK PULP & PAPER CO.

This mill was closed down for ten days but is now operating to its full capacity again. A break in the casting of the main engine was the cause.

The rumors among the trade that Mr. Beveridge contemplates retiring are entirely unfounded. This is a matter of congratulation for the firm as his efficient management has proven most profitable. This mill is a fine example of the advantages of scientific management, making a very high class sheet of paper.

The New Bertram M. F. machine, installed some months ago, is giving excellent satisfaction in the mill and to their customers.

Mr. Norman Beveridge, the son of Mr. James Beveridge, has the pulp mill at Dryden under operation and expects to soon get the paper mill producing as well.

BRITISH TRADE NEWS

(Special to the Pulp and Paper Magazine.)

London, January 20, 1913.

British trade in 1912, according to the Government returns published in January, was a record—far above 1911, which also exceeded the figures for any previous year. The increase during the year was remarkably general and the profits, when the time of reckoning comes to pass, should send a glow of warmth into the hearts of English mill owners. Briefly the figures are:

	1912	1911
Imports of paper	£7,233,398	£6,574,550
Exports of paper	3,550,716	3,310,966
Re-exports of paper	184,513	208,764

During the twelve months, Newfoundland exported to the British market £394,764 worth of paper, an increase of £130,202, which is greater than any other country shipping paper on reels to English ports. Canada has not paid the attention to this market it deserves; as a matter of fact, the Dominion exports to it have decreased, but the progress of Newfoundland in particular has been watched in England with the keenest interest, and to-day Sweden stands in the unhappy position of being out-rivalled by Newfoundland. That is to say, Swedish paper on reels decreased to the extent of £59,033, as against Newfoundland paper on reels, which apparently is looked upon as superior and more suitable than the Swedish. Needless to say, this great jump—the figures have been steadily going up since 1909—gives the greatest satisfaction amongst paper-makers in British markets. Mostly all cheap papers are imported from Scandinavia, whilst English and Scotch mill owners go in for good class papers, their exports of printings and writings to Canada in 1912 totalling £161,617, compared with £152,329 in 1911. If Newfoundland is able to oust Sweden, as regards imports to British ports, there is no knowing what the Dominion, generally speaking, may do in regard to Germany and Norway!

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For china clay works like those at St. Remi, or any other works in the Dominion that turn out the clay for paper-makers' use, there is a very bright outlook. Makers of China clay in Canada to-day have one of the greatest chances in their lives. In the United States there is an outcry that paper-makers cannot get enough to meet their demands and the English producers are unable to cope with the position. French makes are not in request very much; but if the Canadian material could be got out in larger quantities the United States markets would be relieved and in time a consumer would be found in the English market. The position of affairs is somewhat critical in Cornwall (England) just now. Railway facilities are reported to be inadequate to keep the export trade and shipping at Fowey port is in a bad way, owing to the want of accommodation for loading and unloading. Up to the present the railway company has decided to spend something like $300,000 on new jetties and wharves, but this sum is not sufficient to satisfy China clay producers and it is greatly feared that in the near future there will be a scarcity of clay. This is where the United States will feel the pinch, in addition to Scandinavian paper-makers, and if it is possible to bring the Canadian material to the front during these days, it may be taken for granted that the outlook should be a prosperous one. Meantime, the Great Western Railway Company is slow in moving in Cornwall to improve the port and China clay sellers are protesting against their industry being hampered in this way. One large firm predicts a scarcity.

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Men in the wood pulp trade will be interested to know that Becker & Company, Limited, of London, in addition to the orders standing on their books—and it may safely be assumed they were very considerable financially and otherwise—booked new business in 1912 to the extent of three and one-quarter million pounds sterling. They are the largest wood pulp importers in England, where they represent the Chicoutimi Pulp Mill and the Macleod Pulp Company, of Liverpool, (Canada). The Chicoutimi Pulp Mill is one of those fortunate concerns which are preparing to supply pulp to English firms on a ten year's contract.

* * * *

About this period twelve months ago, exports of pulp and paper from Canada to English ports were held up by the coal strike. To some of the principal paper mills the crisis was most serious and thousands of dollars were lost in a week, whilst many mills had to be closed. If the paper-makers of England do not quickly make up their minds they will experience another setback, as their mill hands are adopting a threatening attitude over the Saturday (noon) to Monday stop question. The hands want to cease work at 12 o'clock noon on Saturdays and resume at 6 o'clock a.m. on Mondays. The owners of the mills, in many cases, are against the request and they have now received a manifesto from the men, who have decided not to take any action until January 20th, pending a reply, "Yes," or, "No." If the reply is in the negative it is feared that all men in the unions will cease work, and should this course be taken, the present brisk trade will very soon become dislocated. The British paper-maker, however, has a happy knack of settling differences, and very probably he will find some way out of the present difficulty.

* * * *

According to information that has arrived from an excellent Norwegian source, if a paper-maker travelled round all the chemical pulp mills in Norway he would fail to secure enough pulp to keep him going for two weeks. The question one may ask is: What will become of the 1913 requirements wanted from time to time? Those who have not fixed up contracts will find themselves in an invidious position, because the demand will exceed the supply. What the sellers have on hand is intended for sale at the highest figures. Therefore, the buyer will have to find out where pulp is to be had and arrange his price. Most of the Norwegian mills are making up their balance sheets for 1912 and navigation in the Gulf of Bothnia is just closed. The scarcity of chemical pulp in Norway is naturally creating a good demand for mechanical, and it is also reported that in the latter considerable business is passing.

* * * *

The enlargement and improvements effected in the publication of "The Pulp and Paper Magazine of Canada" have won the encomiums of men in the pulp and paper trade of the United Kingdom. One gentleman told your representative that it was the best journal in every way that is turned out for the trade, and it beat American, English, German, Norwegian, Finnish or Swedish papers.

MONTREAL PULP AND PAPER MATTERS

(Special Correspondence of Pulp and Paper Magazine.)

Montreal, Jan. 30th, 1913.

Among pulp and paper men in this province, there is little or nothing being discussed but the developments taking place in connection with the Washington-Quebec controversy over the removal of the embargo on wood cut from certain Crown Lands in this province. The order-in-council issued by the Gouin Government was made public on December 31st, and the expectation was that the Washington authorities would accept the interpretation of the Provincial Government and immediately admit the paper made by the four companies mentioned in the order-in-council, free of duty. The Washington authorities, however, have been primed full of objections by the American pulp and paper manufacturers, with the result that the whole matter is held up pending an official verdict by the Washington Government. The following statement was issued a few days ago by the Treasury Department at Washington, which explains the American view of the situation:

"To collectors of customs and others concerned:

"The Department is informed that certain manufacturers of paper in the Province of Quebec are claiming the right, by virtue of an order-in-council dated December 31st, 1912, to state in their declarations upon invoices that the wood from which the merchandise was manufactured, though cut on Crown Lands, is free from all restrictions of manufacture, exportation, etc.

"Pending further instructions, collectors are hereby instructed to continue to collect duty on all importations of pulp, paper or paper board manufactured from wood cut on Crown Lands in the Province of Quebec, notwithstanding statements in such declarations relating to the freedom of the wood, cut in such lands from restrictions as to manufacture, exportation, etc."

"(Signed) FRANKLIN MacVEAGH,
"Secretary."

On the other hand, the American publishers want Canadian paper, and are putting up a determined fight before the Government to secure free paper from this country, or failing that, to have the American Government meet the Quebec order-in-council half way and admit paper free from the four companies mentioned by the order-in-council.

The fight between the American paper manufacturers and the American publishers is an interesting one. It is not the first time that these two bodies have crossed swords, nor is it likely to be the last time. Heretofore the publishers, through the enormous influence they can wield by publicity, have got the better of the argument. This is shown by the fact that the Government practically acceded to their requests two years ago and admitted Canadian paper free, when removed from all restrictions in this country. The American publishers claim that if they are left to the mercy of American newspaper manufacturers, the latter will "squeeze" them and force them to pay an unreasonably high price for their paper. The manufacturers, on the other hand, point out that they are a great manufacturing industry with some $550,000,000 invested in plant, machinery and equipment, and that it is unfair for them to meet the open competition of the world when practically every other manufacturing industry in the United States is protected. They claim that they are unable to compete with Canadian manufacturers of paper, as their Northern neighbors have an abundant supply of raw material, have unequalled water powers and a plentiful supply of labor. They point out that as a result of an investigation, it was shown that Canadians can manufacture paper $5.50 a ton cheaper than Americans can, and unless they are protected to this extent, the Canadian manufacturers can undersell them and eventually compel them to close down their mills. This fight, while in a sense between various American interests, is nevertheless of the utmost importance to Canadians, and the outcome is being watched by the pulp and paper men in this province with the greatest interest.

As was stated in our last letter, the action of the Gouin Government in lifting the embargo from the output of four mills, is still a subject of controversy in this province. The mills affected, and others who are likely to seek similar concessions, defend the action of the Government. Others again are loud in their complaints, and claim that the four companies seeking special legislation were actuated by selfish motives, and that it is likely to do more harm to the industry than good. There is a growing feeling in this province that the various pulp and paper men should unite and form an association for their mutual protection. It is pointed out that at present a single manufacturer or group of manufacturers adopts a certain policy or secures special legislation without any consideration as to how it will affect his fellow manufacturers, or the interests of the country as a whole. It is felt that an organization embracing all the pulp and paper men in the country would be a wise move. Such an organization could gather expert evidence in regard to the state of the industry, keep in close touch with the developments taking place at home and abroad, secure or prevent legislation as the case might be, and in a thousand other ways help, not only the industry as a whole, but the whole country. One of the most prominent paper men in the province in an interview with your correspondent was strongly of the opinion that such an organization was needed. In an interview he said:

"The result of the controversy between the Washington and Quebec Governments over the removal of the embargo on wood cut from Crown Lands will result in the organization of a Canadian Pulp and Paper Men's Association somewhat along the lines of the American association." Continuing, the paper manufacturer said: "The action of the Quebec Government in removing the embargo from the wood supply of four companies, smacks of unfair play, and was undoubtedly actuated by selfish motives. Apparently, two or three paper manufacturers in this province set themselves up as authorities, and have such an influence with the Quebec Government that they can secure what legislation they like. The pulp and paper men of Quebec, Ontario and the other provinces, should unite and secure the services of some such expert as Mr. Hastings, of New York, who would devote his whole time to looking after the interests of the industry. As it is at present, we face such an organization in the United States, who possess expert advice and are able to influence legislation to a marked extent. In Canada we have no such organization, and two or three mills get together and secure legislation, which is oftentimes

hurtful to the industry as a whole and to the country. Most paper men feel that it was an inopportune time for Sir Lomer Gouin to make any changes in the pulp and paper situation at a time when the whole subject was being investigated by the United States Congressional Committee. Such an action gives the United States a bad impression of us, and it gives them the idea that we are resorting to trickery and sharp practices."

When asked what he believed would be the outcome of the controversy, the paper manufacturer said:

"I am satisfied that Washington will eventually accept the contention of the Quebec paper men. They have already admitted the paper of the Powell River Pulp & Power Company of British Columbia, and having this precedent, they cannot very well refuse to accept paper removed of all restrictions from the Province of Quebec. There is this difference, however: Mr. Nelson, head of the Powell River Company, was an American manufacturer, who built the mill for the express purpose of supplying American paper needs, and there is also the fact to be considered that there are very few mills on the Pacific slope, while on the Atlantic side there are too many. Naturally, if the limits are free from all restrictions, the Americans must admit it duty free, as it comes under section 2 of the recent agreement. I am of the opinion, however, that Sir Lomer Gouin will remove all the restrictions and throw the forests of the province open to all comers. This undoubtedly would be bad for the province, and would defeat the object he had two years ago, when he placed his embargo on wood cut from Crown Lands. Ontario is vitally concerned in this question, as they have now an output of 720 tons of news print per day. Had that province been consulted, there is no doubt but that Sir Lomer Gouin would not have acted as he did. This present action seems ill-advised and untimely, and points to the need of an organization among the pulp and paper men of the Dominion. I think that will be one of the outcomes of the present controversy."

Apparently, American pulp and paper men are not being deterred by the latest order-in-council from investing in this province. The latest American company to cross the border is the St. Lawrence Pulp & Lumber Corporation, a company formed under the laws of the State of New York, with an authorized paid-up capital of $4,000,000. Of this, $2,000,000 will be immediately invested in this province in pulp and paper mills and in the lumber business. The Canadian offices of the company will be at New Carlisle in Bonaventure County, and Mr. John Hall Kelly, Local Member for Bonaventure, will act as their legal representative. The new company have taken over the Grand Pabos Lumber Company's limits, formerly owned by King Bros. of Gaspe Peninsula. It is said that the price paid for these limits was in the neighborhood of $1,000,000. Engineers are now at work going over the property, and Mr. Kelly has announced that the construction work will commence in the spring, and will be vigorously pushed. He has not stated what the plans of the new company are, but it is generally believed that they will manufacture both wood pulp and news. In an interview, Mr. Kelly, who, by the way, is a supporter of the Gouin Government, expressed the following views in regard to the recent order-in-council:

"The policy of the Gouin Government as enacted a few years ago, was to bring pulp and paper mills to the Province of Quebec, and in order to bring about that result, Sir Lomer's Government has always been prepared to offer all possible inducements. This recent order-in-council, whereby four large paper mills are relieved from the obligation to manufacture their pulp wood in this province, and are allowed to ship it into the United States in the raw state, can be interpreted in one or two ways:

"(1) As a backdown from his old policy or (2) as another proof of his determination to persist in his policy and to encourage the paper mills to come to Canada. Anyone who knows the Premier and has followed his public utterances during the past few years, knows that when he says a thing he means it, and, as he has stated that his policy is to prevent the export of pulp wood in the raw state, and encourage the pulp and paper mills to come to Canada, we can rest assured that the recent order-in-council is only the reaffirmation of his cherished policy."

"But if that is so, why has he passed an order-in-council allowing these four companies to export their pulp wood in the raw state?" "Here is the position. The United States tariff law provides that if any country passes laws or regulations whereby that country prevents the export of pulp wood in the raw state from any of its lands, then the United States retaliates by saying: 'Very well, keep your pulp wood, but if you manufacture it into paper, before you will bring your manufactured article into the United States, you will pay five dollars and sixty-six cents a ton on your paper.'

"Now, by passing the order-in-council, whereby the four paper mills in the province are no longer subject to the prohibition, not to export their wood, the Government has placed these companies in the position that they can go to the United States customs and show that their manufactured paper does not come from lands on which any restriction exists, and they will thus save the customs duty of $5.65 per ton on their paper, which is a very great consideration and a great encouragement to the paper industry in this province." Asked if he thought these companies would now ship their wood in the raw state, Mr. Kelly replied:

"No; first of all because it would not pay them to do so, now that they have their paper mills built here and can thus save the United States customs duty; secondly, because these men know the value of their standing lumber and did not ship it in the raw state when they had the right to do so, that is to say, before the order-in-council, prohibiting the export, was enacted; and thirdly, because the Government having passed the recent order-in-council in order to help these companies to avoid the United States customs, and not with the object of allowing them to export the raw material, would certainly resent any move whereby its policy to prevent the export of the raw material would be defeated, and would immediately repeal the concession in the case of the offending company. That is why the order-in-council relates to specified companies, not to all companies generally. As it is, they can reach any special company by a mere order-in-council, which they could not do if the law was one in general terms."

Asked if he thought the United States Government would not pass some tariff regulation to checkmate Sir Lomer's move, Mr. Kelly said:

"Undoubtedly the paper manufacturers across the line will do all they can in that direction, but on the other hand the newspapers of the United States are all in favor of getting their paper as cheap as possible, and the question is which of the two will win out at Washington. Past experience would seem to indicate that

the chances are in favor of the newspapers. The next few days will soon decide between the two.'

"Will the Gouin Government grant the same privileges to other companies putting up paper mills?" Mr. Kelly was asked. "I understand that such is the policy," he replied, "and Sir Lomer's past record is there to show that what he does for one he will do for all. In fact, he informed me this morning that he was delighted to hear of the St. Lawrence Pulp & Lumber Corporation coming to Canada, and that if they put up a paper mill they would receive the same concessions as the four other companies."

The following table shows the lumber, newspaper and wood pulp exports from Canada to the United States during the past two years:

	1912.	1911.
Ash	$ 4,889	$ 11,475
Basswood	2,450	5,993
Hemlock	39,708	11,295
Lath	93,464	107,165
Pickets	29,681	58,063
Railway ties	4,482	14,561
Red pine	20,127	11,037
Shingles	42,072	70,214
Spruce	427,550	236,715
Spruce plank	6,404	12,934
Telegraph and telephone poles	9,757	13,885
White pine	1,768,640	1,755,610
News print paper	865,533	653,162
Wood pulp, ground	417,320	542,836
	$3,362,077	$3,503,945

Mr. A. Knechtel, Inspector of Dominion Forest Reserves, addressing a meeting in Montreal recently, spoke of the enormous waste caused by forest fires to the timber itself and also outlined the effect of forest fires on the agricultural resources of the country. "Forests, if left alone, served to retain moisture in the spring, whereas, if they were swept away by fire or the marauding axe of the pioneer, the waters swept into the rivers in the spring time, causing floods and a lack of water in other seasons. It was a question of conserving the water as well as the forest supply."

The lecture was illustrated with stereopticon views.

The Abitibi Pulp & Paper Mills, Limited, completed its organization on the 21st inst. The following directors were elected: Messrs. F. H. Anson, Shirley Ogilvie, Victor E. Mitchell, D. Lorne McGibbon, Sir Thomas Tait, all of Montreal; Jas. Playfair, of Midland, Ont.; Hon. George Gordon, Cache Bay, Ont.; J. A. McAndrews, Toronto, Ont.; Geo. E. Challes, Toronto.

The following officers were chosen: F. H. Anson, president; Shirley Ogilvie, vice-president and treasurer; J. A. McAndrew, secretary; E. C. Morris, assistant secretary and treasurer.

The company started construction work some time ago and at present have a force of over 200 men at work on the company's property. The underwriting of the company's securities is being taken up privately, but a public announcement will be forthcoming shortly. The authorized capital is $1,500,000 bonds, $1,500,000 preferred and $3,500,000 common stock. Of the bonds and preferred stock, it is proposed to issue $1,000,000 each.

Mr. Anson, the president of the company, stated that they expected to commence operations by the first February, 1914. At the outset they would confine their attentions to the making of ground wood, but a little later on would probably extend and manufacture sulphite and eventually news print. At the outset, they expect to have 21,500 h.p. generated, which will be more than sufficient to run the eighteen ten-ton grinders which will be installed. After making due allowances for all contingencies, Mr. Anson expects that the company will produce 50,000 tons of pulp per year. The railway at the present time is within five miles of the company's plant. J. C. R.

PRICE BROS & COMPANY, LIMITED.

The annual statement of Price Bros. & Company, Limited, Jouquiere, Que., for the year ending November 30th last, made a very satisfactory showing. The profits were as follows:

	1912.	1911.	Inc.
Profits	$463,716	$393,964	$69,752
Bond interest	246,775	213,708	33,067
Net profits	$216,941	$180,255	$36,686

Net profits in 1911 were equal to 3.65 on the capital stock.

The consolidated surplus account on November 30, 1911, was $718,185. With the net profits from 1912 added to this sum, after deduction of $82,662 for reorganization expenses, which have now been entirely written off, the sum at credit of surplus account at the close of the last year was $852,463.

Mr. William Price, president of the company, said in his address:—

"Your directors consider these earnings most satisfactory, particularly as the new pulp and paper plant at Kenogami did not commence operations until after the close of the company's fiscal year.

"Your directors have not considered it necessary to carry anything to reserve for depreciation on fixed assets, in view of the low figure at which these stand in the books and considering the fact that a considerable part of the cost of improvements to the properties has been charged to revenue.

"During the year $2,557,848.92 has been expended on additions to properties, principally on account of the construction of the company's pulp and paper plant at Kenogami. At this plant operations were commenced on the 1st of December last, and it is expected that the plant will be running to its full capacity of 150 tons of paper daily by the first of May next.

"Since the last report, the company has issued $243,333.33 five per cent. first mortgage bonds, making the total issue to date $5,110,000 of the authorized issue of $6,000,000."

The balance sheet of the company shows some changes owing to the fact that while in previous years the entire share capital and bonds of the Jonquiere Pulp Company, Limited, and the Price-Porritt Pulp & Paper Company, Limited, (which are owned by Price Brothers & Company, Limited), have been shown as investments, this year the balance sheet consolidates the affairs of the three companies. The capital surplus (which is the increase in book values of capital assets upon valuation at 19th July, 1910), has been reduced by the amount of goodwill which arises in the consolidation.

The assets of the company are given as $15,007,111, of which $13,298,499 is in real estate, plant, water powers, etc. The liabilities consist of $5,000,0000 capital stock; $5,110,000 bonds; $1,072,837 accounts and bills payable, etc.; $393,836 reserve funds; $2,556,681 capital surplus; $852,463 surplus account.

PULP AND PAPER MARKETS

Toronto, Jan. 31, 1913.

There was apparently a slight falling off in the home demand for news print earlier in the month, but it has strengthened again during the past few days, while from the United States there has been no slackening in the demand. Prices contracted for during the coming year are understood in many cases to be slightly lower than was the case in 1912. The outlook is very bright. Book, writing and ledger papers are in good request, and prices keep up well. A large trade is being done in kraft and wrappings, but cases of cutting the price of the former are heard of. The groundwood situation has improved, and enquiries have been much more frequent than has been the case for months. This will serve to stiffen the backbone of holders, although it is hardly probable that prices can advance very materially in view of the heavy stocks piled at the various mills. Sulphite is as strong as ever.

Quotations (f.o.b. Toronto), for paper, pulp and paper stock are as follows:

Paper.

News (rolls) $42 to $45, according to quantity.
News (sheet) $44 to $50, according to quantity.
Book papers (carload) No. 3, 4½c. to 4¾c.
Book paper (broken lots) No. 3, 4½c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2, 5½c. to 5¾c.
Book papers (carload) No. 1, 5½c. to 6¼c.
Book papers (broken lots) No. 1, 6¾c.
Writings 4½c. to 7½c.
Bonds, 8c. to 18c.
Fibre, 3¾c. to 4c.
Manilla B., 3c. to 3½c.
Manilla No. 2, 3½c. to 3¾c.
Manilla No. 1, 3¾c. to 4¼c.
Kraft, 4c to 4½c.

Pulp.

Ground wood (at mill), $16 to $17.
Sulphite (unbleached), $45 to $47, in Canada.
Sulphite (unbleached), $47 to $49, in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

Waste Paper, $9 to $10.
No. 1 hard shavings, $1.85.
No. 1 soft white shavings, $1.80 to $1.85.
Mixed shavings, 60c.
White blanks, $1.00.
Ledger, $1.15 to $1.20.
No. 1 book stock, 85c. to 90c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.10 to $1.15.
No. 1 print manillas, 60c.
Folded news, 55c.
Over issues, $14.
Over issues (folded), $15.
No. 1 clean mixed paper, 42½c. to 47½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50 to $5.75.
Fancy shirt cuttings, $4.10.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.60.
Ordinary satinets, 85c. to 90c.

Montreal, January 30th, 1913.

Ther are few or no price changes to note in connection with pulp and paper from those quoted two weeks ago. The situation remains remarkably satisfactory, despite the increase in production and the uncertainty regarding tariff changes. Apparently, there is a good supply of news on hand in the United States, and prices in this commodity have not shown any strength, but remain about stationary. Ground wood stocks are accumulating, owing to the very mild weather which has prevailed during the winter and to the frequent rains. The result of this mild weather and accumulation in stocks, is seen in slightly lower prices. On the other hand, sulphite is much stronger owing to a decrease in the output in Canada. One large mill was closed down for some months and has just recently started up one of its digestors; another will start in three weeks, another three weeks later and a fourth three weeks after that, but in the meantime the stock of sulphite has decreased.

Sulphite delivered in the United States runs from $46 to $47, while delivered in Canada it varies from $44 to $45. News in the United States runs from $41 to $43 and in Canada from $41 to $42 for large contracts and about $45 for smaller orders. The mills all seem to be busy, and are finding no difficulty in disposing of their output. Some of the Quebec mills have recently been placing heavy orders in Chicago and also with Lloyds. The following are the prices for paper, pulp and paper stock: F.O.B. Montreal.

Paper.

News, $41 to $43, delivered in United States.
News, $41 to 42 for large orders, $45 for small orders, delivered in Eastern Canada.
Newsprint, sheets, $2.25 at mill.
Book papers, carload lots, No. 3, 4½c. to 4¾c.
Book papers, broken lots, No. 3, 4½c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3½c.
Broken lots, No. 2, 5¼c. to 5½c.
Carload lots, No. 1, 5½ to 6¼c.
Broken lots, No. 1, 6c. to 6¾c.
Manilla B., 3¼c. to 3¾c.

Wrappings.

Fibre, 3¾c. to 4c.
No. 2 manilla, 3½c.
No. 1 manilla, 3¾c. to 4c.
Kraft, 4c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.70 to $1.80.
No. 1 soft white shavings, $1.60.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50c. to 55c.
White blanks, 80c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c.
Manilla envelope cuttings, $1.05.
White envelope cuttings, $1.75.
No. 1 print Manillas, 55c to 60c.
Folded news, 50c.
Crushed news, 45c.
Good mixed paper, 40 to 42½c.
Old white cotton, $2.50.

Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.00 to $5.50.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $1.75 to $2.00.
Blue overall cuttings, $3.40 to $3.50.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.50 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.50 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.25.
New light flannelettes, $3.75 to $4.00.
Flock satinets roofing stock, 90c. o $1.00.
Ordinary satinets, 70c. to 80c.
Tailors' sweepings, 65c. to 70c.

Pulp.

Ground wood (at mill), $14.50 to $15.
Sulphite, No. 1 unbleached, $46 to $47, delivered in United States.
Sulphite, $42 to $45, delivered in Canada.
Sulphite (bleached), $51 to $53.

SCANDINAVIAN MARKETS.

The wood pulp market is continually firm with a rising tendency. Any important changes in the prices, however, have not taken place since our last report, but are not excluded in the near future. In Germany, very much is heard about the rise in the price of pulp wood in all countries, which again necessarily must influence the part of wood pulp. The United States import is also steadily increasing, which goes to prove that the large consumption necessitates a forced import from other pulp producing countries.

The market is very firm both for wood pulp and cellulose.

The latest quotations are:—

For England—

	£ s. d.		£ s. d.
Sulphite, bleached	11 10 0	to	12 10 0
Sulphite, light bleached	9 2 6		9 7 6
Sulphite, strong bleached	8 12 6		8 17 6
Sulphate, 1me.	8 0 0		8 2 6
Mechanical, wet	2 6 6		2 10 0
Mechanical, dry	5 5 0		5 10 0

All per. ton, c.i.f., the east coast of England.

The Swedish quotations are per ton, f.o.b., Swedish ports—

Mechanical, wet white	$ 9 07	to	$ 9 87
Mechanical, dry white	20 00		21 33
Sulphite, light bleached, 1me.	40 00		41 87
Sulphite, strong bleached 1me.	38 00		39 47
Sulphate, light bleached, ordinary	34 67		36 00
Sulphate, strong	34 67		36 00

The Norwegian trade paper Farmand writes:—

At the beginning of the year almost everybody connected with the trade was of the opinion that mechanical wood pulp would command very high or even exhorbitant prices before the winter was over. Buyers held back, however, delaying purchases as much as possible, and as a consequence the market stagnated during January and February. Some five year contracts were reported in January at unnecessarily low prices; buyers were triumphant and hammered the price, until prompt pulp and for delivery over the year came down to $8.88 and occasionally even less. This slump lasted to the end of May, since which time the market has slowly recovered.

At the beginning of June, Norwegian mills would not take less than $9.06 for prompt and many of them would not consider anything below $9.33, at which figures a good deal of business was done both for prompt and for delivery over 1913. During August the price hardened to $9.60 and in November it came nearer $9.87 net f.o.b. In December the Norwegian market became inactive, partly perhaps because the Baltic shipping season continued longer than expected, and at the moment $9.60 to $9.87 is probably the best which can be obtained. In spite of the heavy rains in August, a few mills reported water scarcity in October, but on the whole water conditions have been favorable this year at the Norwegian mills except in the northern part of the country, where there was a prolonged drought during the summer. The Norwegian mechanical pulp mills have been compelled to pay much more than last year for their winter supply of logs.

THE BRITISH MARKETS.

(Special to The Pulp and Paper Magazine.)

London, January 23, 1913.

As was anticipated in the January issue of the "Pulp and Paper Magazine of Canada," the British manufacturers of papers have found that it was impossible to drag along on their old prices. Consequently, just before the dawn of the new year a meeting was convened to consider an advance on all grades, but up to the present the proceedings have been kept very private. It has, however, leaked out that a rise equal to a cent should be charged when an opportunity presented itself. The British paper-maker is naturally experiencing extra expenditure in the cost of production, and from all accounts there are very anxious times ahead of him during the coming year. One of the reasons for keeping down prices was the keen competition amongst the mills and the proverbial dread of "The Green Eyed Monster," in the shape of the foreigner. But the latest information from foreign sources shows that home competition is at the root of all cheap and cutting quotations. This is evidenced by the fact that an agent for a foreign mill in London recently got two and one-half per cent. more for his paper for a newspaper office than his English rival, who really had the advantage in many ways, as the newspaper found it necessary to have a large proportion of local supply. Norwegians are also consequently harping on English cut prices and state they are willing to co-operate, to a certain extent, for a betterment in quotations. As matters stand now paper manufacturers are endeavoring to get the increased price to cover the increased cost in production, and the mills in all parts of the country opened the new year with order books "filled to the brim."

* * * *

A very satisfactory feature of the imports of paper into the United Kingdom is the position Newfoundland has taken. Scandinavian paper finds the product from Newfoundland a keen competitor and the success achieved during 1912 has been very remarkable. Taking the imports for December, Newfoundland contributed printings or writings "on reels" of the value of $209,576—compared with $134,164 in 1911—out of a total of $583,443. This is the only class of paper which is exported largely from the Dominion. Particulars of other grades of papers are, however, interesting. The total imports of paper "not on reels" was $341,296, as against $343,508 for December in 1911; hangings, $97,220, against $99,465 in 1911; coated papers, $96,-

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076, compared with $113,428; packings and wrappings, $1,131,072, against $1,231,797; millboard and wood pulp board, $334,708, compared with $250,272 in December, 1911. Turning to the British exports for the same month, printings reached $702,268, compared with $701,448 in December, 1911. Of these totals $35,773 worth went to Canada, compared with $33,093 in December, 1911. Writings were exported to the extent of $81,216 ($2,521 to Canada), as against $91,897—the exports to Canada showing a reduction equal to $307. Unenumerated papers rose to $26,701, compared with $23,649 in December, 1911, and Canada received $1,318 worth, an increase of $514 over the corresponding period in the previous year.

* * * *

The wood pulp market is firm and sulphite has advanced. Bleached may now be quoted at $55.20 to $59; easy bleaching, first quality, $48 to $48.25; strong quality, $39 to $39.25; soda unbleached, first quality, $38.25; strong unbleached, $38.25 to $38.50. Mechanical is also quoted at a higher price since the close of the old year, pine, 50 per cent. moist, being about $5.25 to $5.50 prompt and pine dry $19.25 to $20. All prices are quoted c.i.f., London, Manchester, Preston and Granton. It is fully anticipated in London circles that sulphite will rise higher in the near future, as makers in the European centres are realizing a considerable increase in the cost of production. Heretofore competition amongst the mills helped to keep down the prices, but the experience of Norwegian, Swedish, and Finnish makers in addition to the Germans, has taught them that it is not congenial to good profits at the end of the year. Narrow margins at the close of 1912 are the complaints now from Scandinavia.

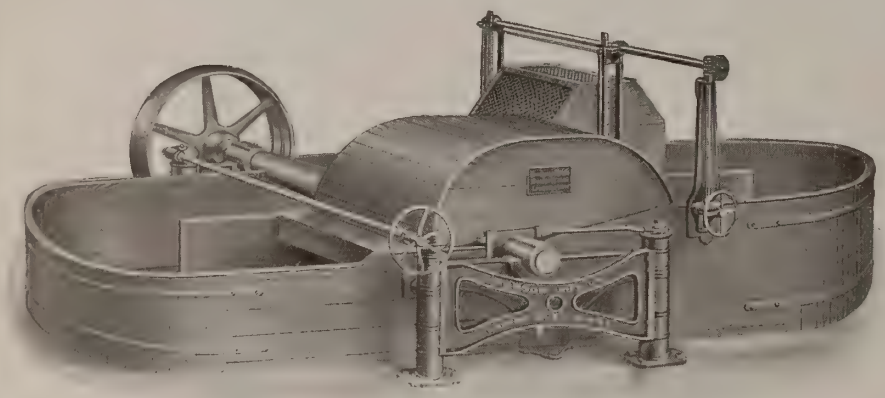
A significant document appears in "Farmand," the trade journal of Norway, from the Riordon Pulp & Paper Company, Limited, to the Canadian agent in Norway. It says that all the output of chemical wood pulp in Canadian mills is sold up for this year, and the attention of the Swedish Export Association should be called to the matter so that they may understand the market better when selling in Canada—"That is, they can get very good prices in the States for any sulphite that they may yet have to dispose of," concludes the letter. It should be recorded that the United States buyers are already in the Scandinavian market for 1914 requirements, but sellers owing to the firmness of the market and the cost of raw materials are seeking an advance in prices on any deals that might be effected.

* * * *

During December all countries exported to the British markets mechanical wet to the extent of $256,722, compared with $174,786 in December, 1911. Of these totals Canada contributed $29,314, as against $5,529 for the corresponding month in 1911—an increase of $23,794.

* * * *

There is a large demand for bleaching powder and makers cannot keep up the supply with satisfaction. The ruling price at present is $24.50 for export f.o.b. Liverpool. China clay is also scarce for export and complaints are being received from America of a shortage. Rags of all grades are keenly sought after. Since the beginning of December up to date, January 23, Canada imported 350 tons of rags and paper stock from British ports.



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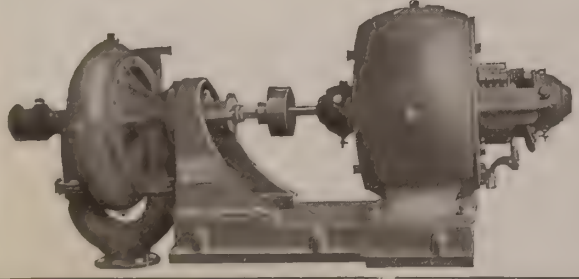
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Lawrence Pump & Engine Co., Lawrence, Mass.
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Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Scales
Mardon, Alfred H., London, E., England.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Marx & Co., J., London, England.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., Wurtemberg, Germany.
Wandel, Chr., Reutlingen, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines
Jenckes Machine Co., Ltd., Sherbroke, Can.
Can. Boving Co., Toronto.
Voith, J. M., Wurtemberg, Germany.
Smith, S. Morgan, Co., York, Pa.
Smith, S. Morgan Co., York, Pa.

Water Wheels
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Can. Boving Co., Toronto.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.

MILL SUPPLIES CONTINUED

Hamilton, Wm. Co., Peterboro, Can.
Holyoke Machine Co., Holyoke, Mass.

Wire Cloth for Paper Machines
Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Finckh, Hermann, Reutlingen, Germany.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Kufferath, Andreas, Mariaweller, Germany.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste
Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Wet Machines
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C. & Co., Ltd., Craig St., Montreal, Que.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

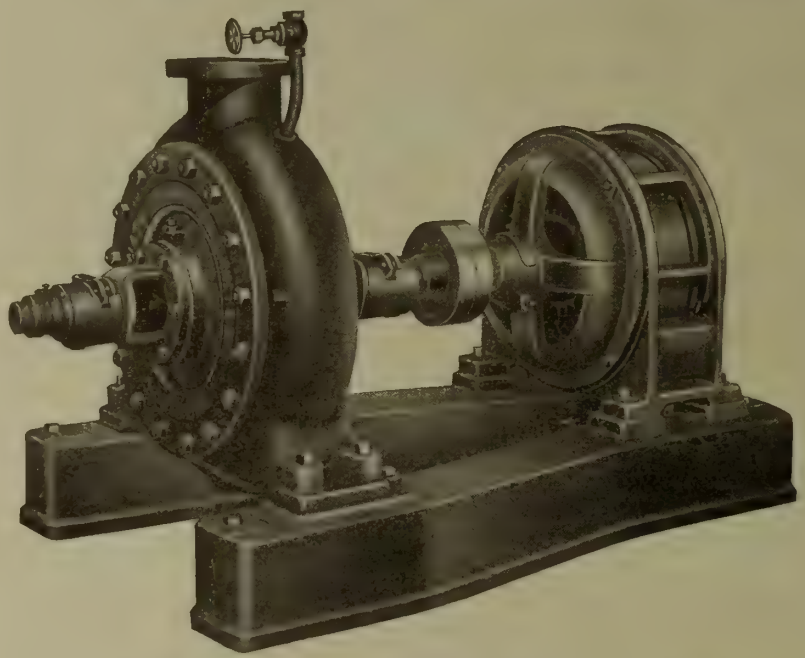
Bag—
Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, J. C. & Co., Ltd., Montreal, Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—
McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—
Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—
Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

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Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson & Co., Ltd., J. C., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Richard & Co., Petit Pre, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson & Co., J. C., Montreal, Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C. & Co., Ltd., 700 Craig St, Montreal, Que.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Booth, J. R., Ottawa, Ont.
Ford, J. & Co., Port Neuf, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag—
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
Wilson, J. C. & Co., 242 Craig W., Montreal, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Tissue and Toilet—
Eddy Co. The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. & Co., 242 Craig W., Montreal, Que.

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Eddy Co., The E. B., Ltd., Hull, Que.
Gore Paper Mills, Dundas, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Wrapping—

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Scotch Fibre", "Invictus Fibre", Hercules Manilla", St. Francis Manilla", "Wave Crest Drug."
Crabtree & Sons, Edwin, Crabtree Mills, Que.
Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont .
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Montreal Paper Co., St. Bazile, Que.
News Pulp & Paper Co., Ltd., Montreal, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Strathcona Paper Co., Strathcona, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

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Tees & Persse.

Edmonton, Alta.
Tees & Persse.

Saskatoon, Alta.
Tees & Persse.

Vancouver, B.C.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.

Victoria, B.C.
Mitchell Bros., 8 Bastion.

Moose Jaw, Sask.
Tees & Persse.

Regina, Sask.
Tees & Persse.

Winnipeg, Man.
Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Douglas & Ratcliffe.
Hudson Paper Co.
Kilgour Bros.
Martin, John, Paper Co., Ltd., 319 William.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.

St. John, N.B.
Schofield Paper Co., Ltd., 26-30 Prince William.

Moncton, N.B.
Reid, F. P. & Co.

Halifax, N.S.
Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.

New Glasgow, N.S.
McGregor, R. & Co.

Kingston, Ont.
Hendry, J. A., 75 Princess.

Hamilton, Ont.
Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

Ottawa, Ont.
Barnard, W. R., 228 Albert.
Reid, C. De Wolf.

Port Arthur, Ont.
Tees & Persse.

Toronto, Ont.
Barber-Ellis Co., Ltd., 71 Wellington St. W.
Brown Bros., Ltd., 51 Wellington St. W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay St.
Douglas & Ratcliff, Ltd., 36 West Market.
Fisher, E. W., 215 Victoria.
Gain, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George
McNairn, J. H., 5 Jarvis.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Whyte, Alex., 64 Wellington St. W.
Wilkinson, E. H., Telephone Building.

Montreal, Que.
Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
Lloyd, Ed., Ltd., Eastern Townships Bank Building.
McFarlane, Son &Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Co., 138 McGill.

Quebec, Que.
Andrews, F. H. & Son, 64 St. Paul.
Reid, C. De Wolf, Herald Bldg.
Rolland, J. B. & Son, 36 St. Paul.

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MASTER MECHANIC wants change; twenty years' experience in Canadian and American pulp and paper mills; good workman and experienced foreman. Best references. Address Box 39, Pulp and Paper Magazine.

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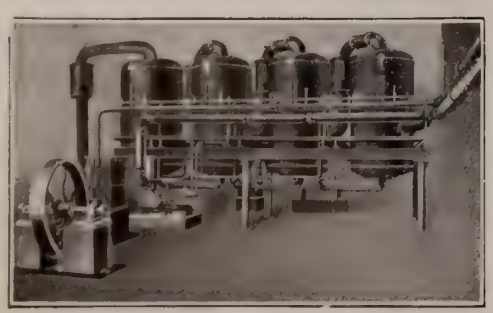
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Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

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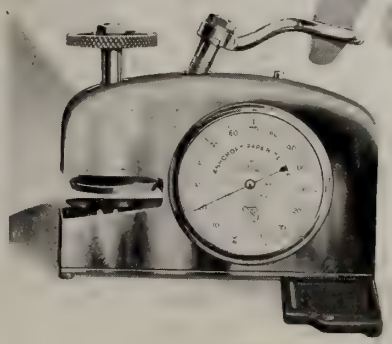


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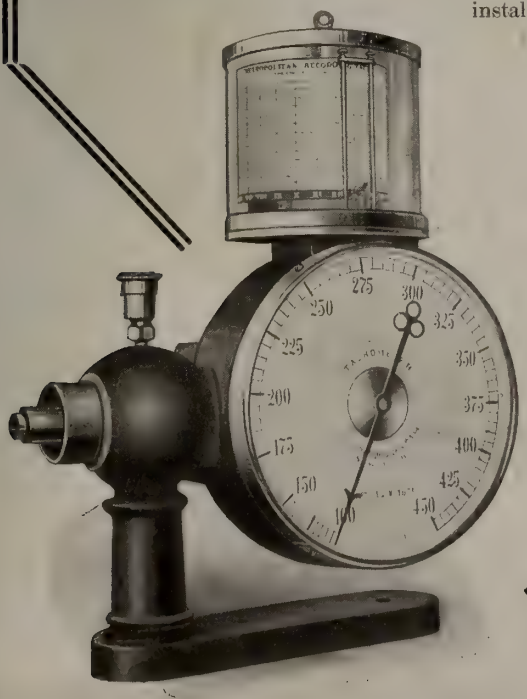
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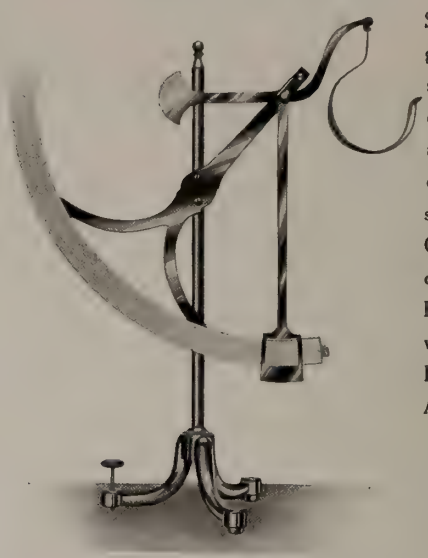
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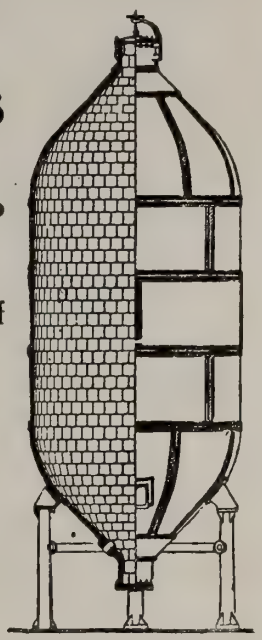
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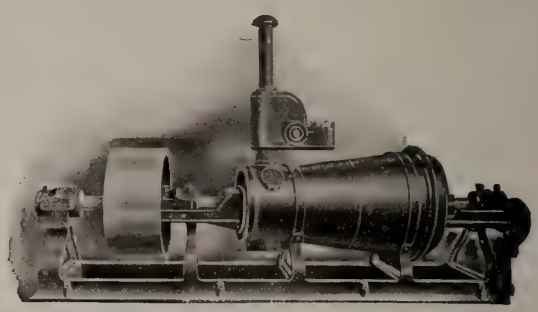
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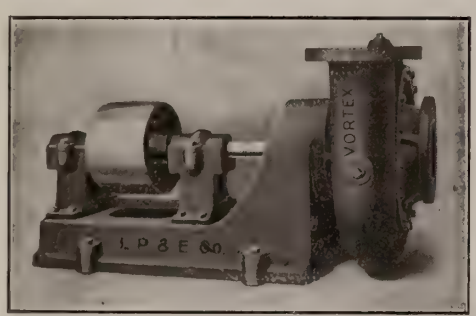
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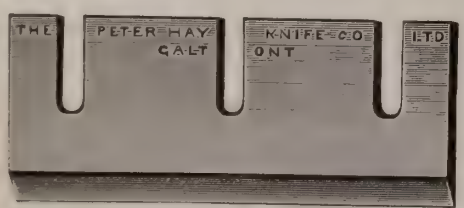
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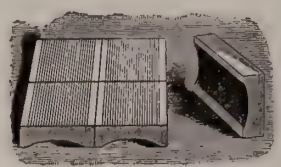


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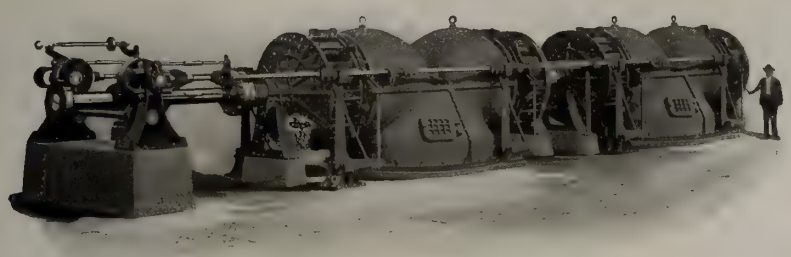
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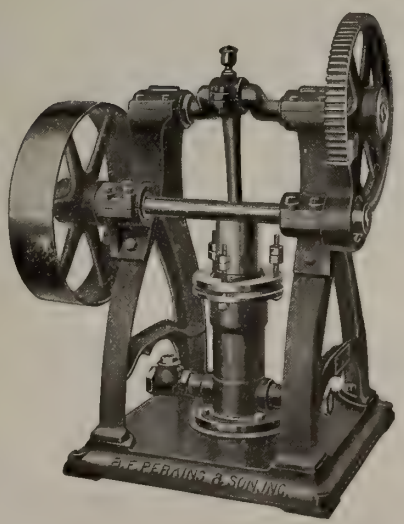
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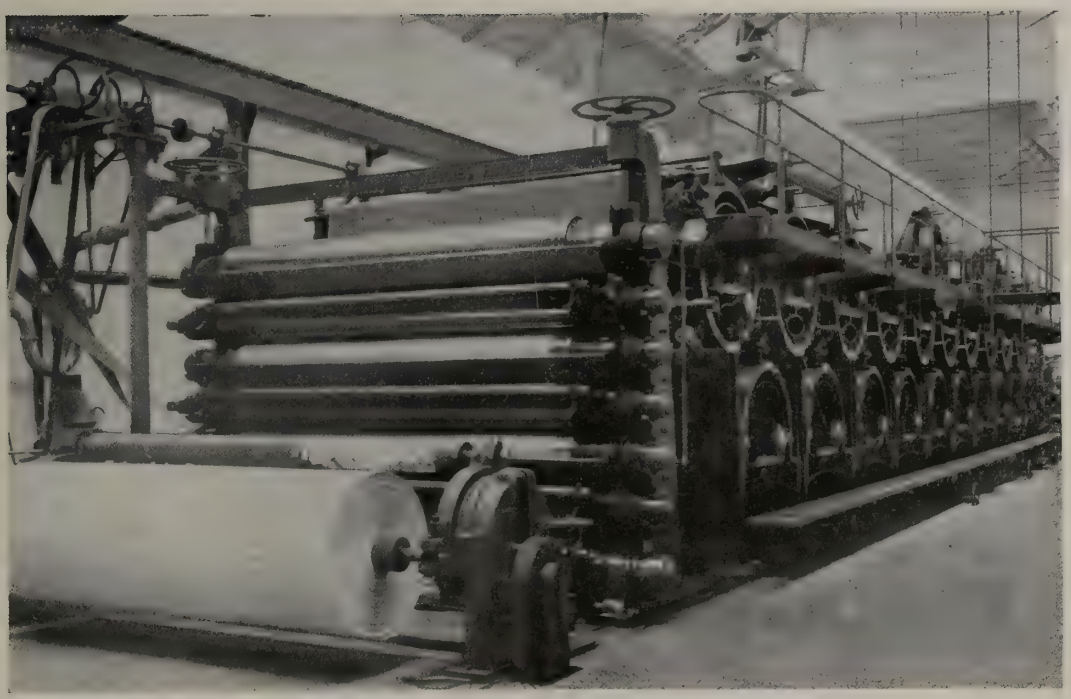
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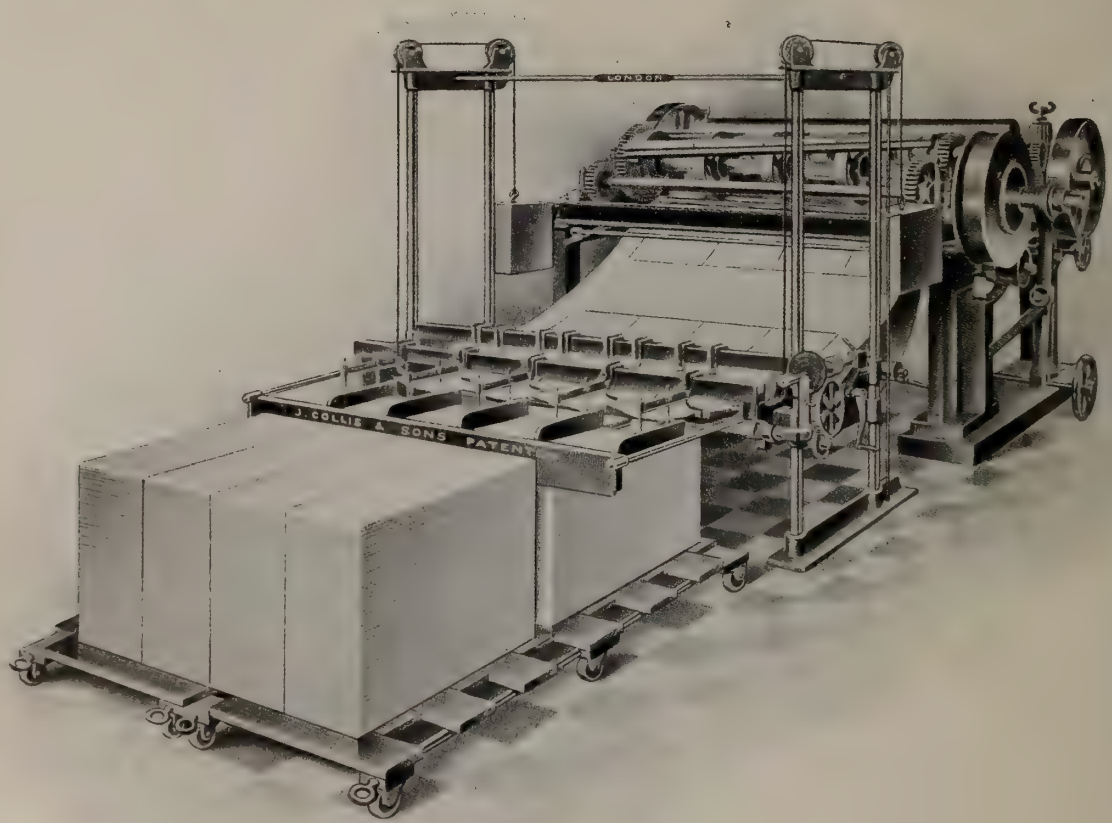
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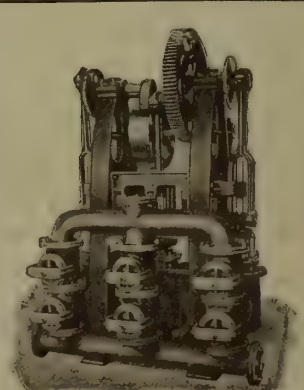
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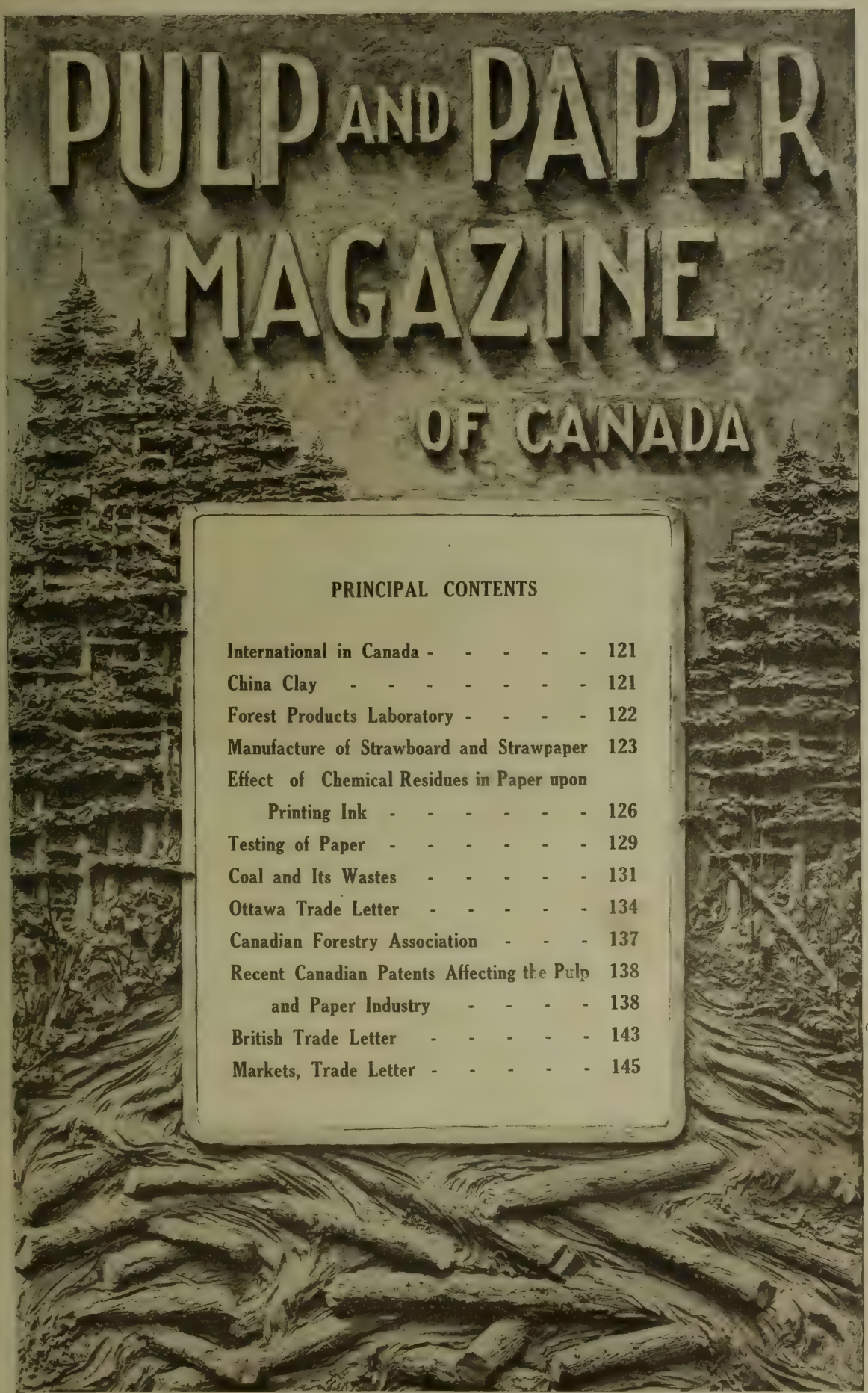
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PULP AND PAPER MAGAZINE OF CANADA



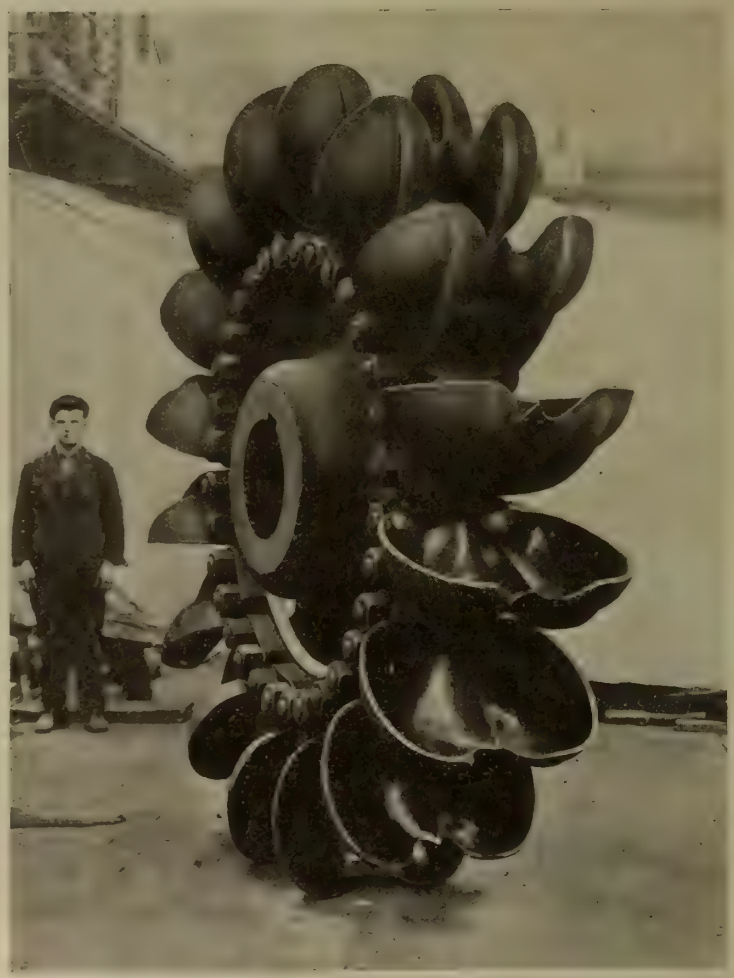
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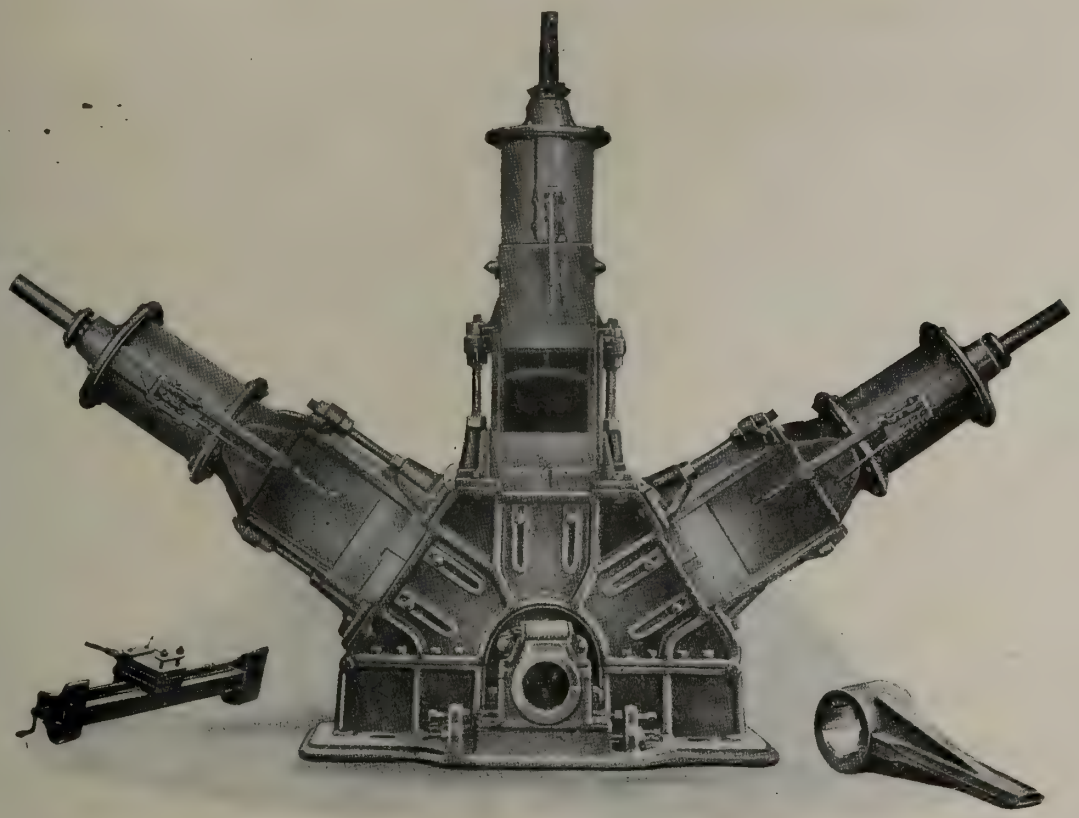
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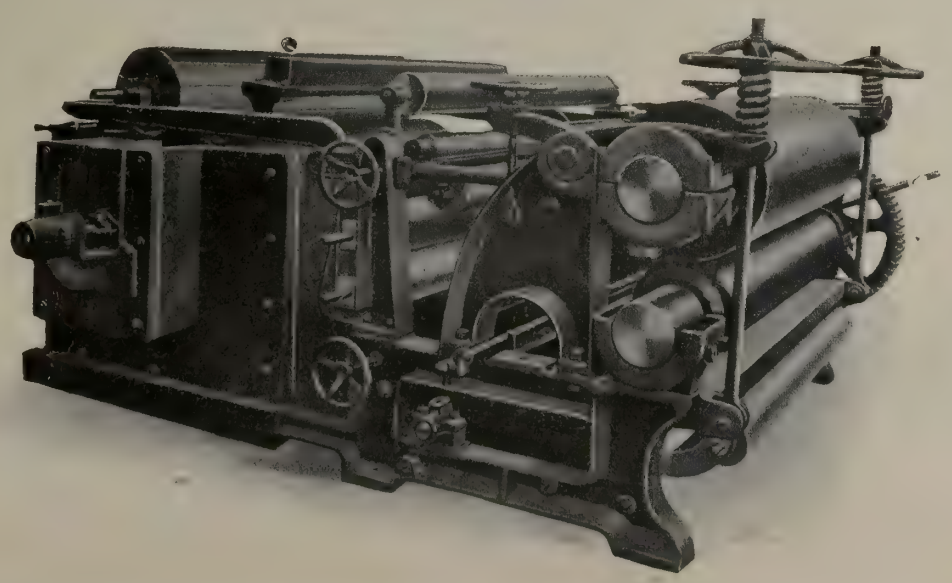
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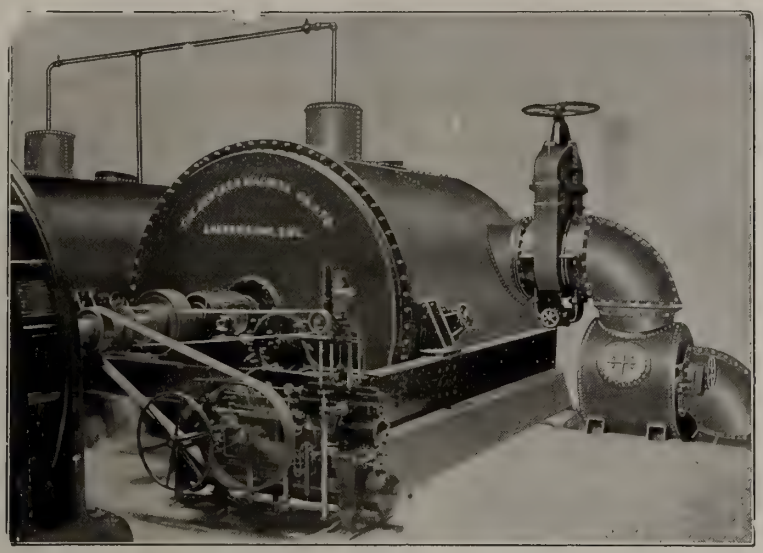
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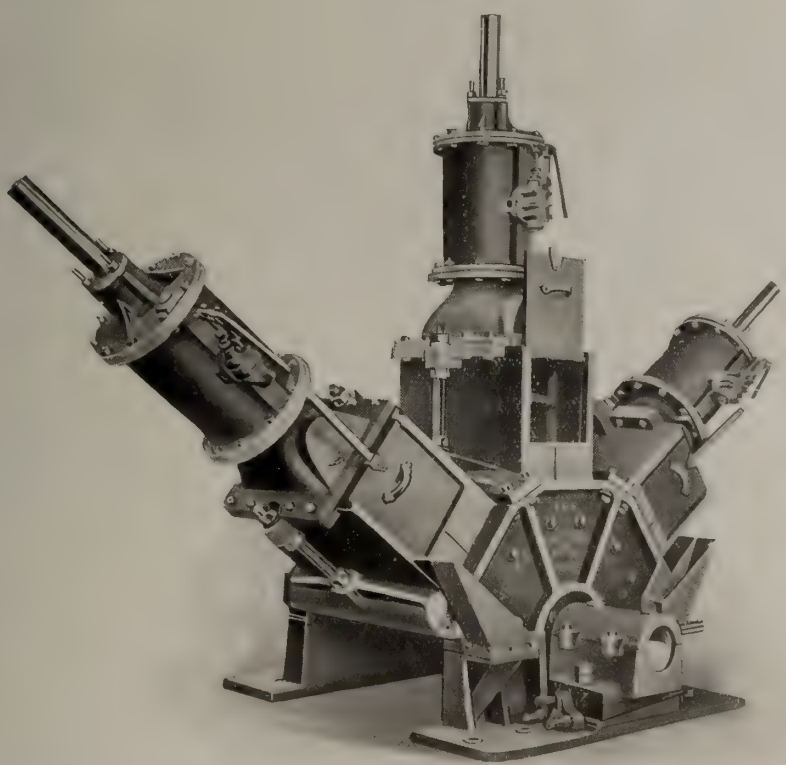
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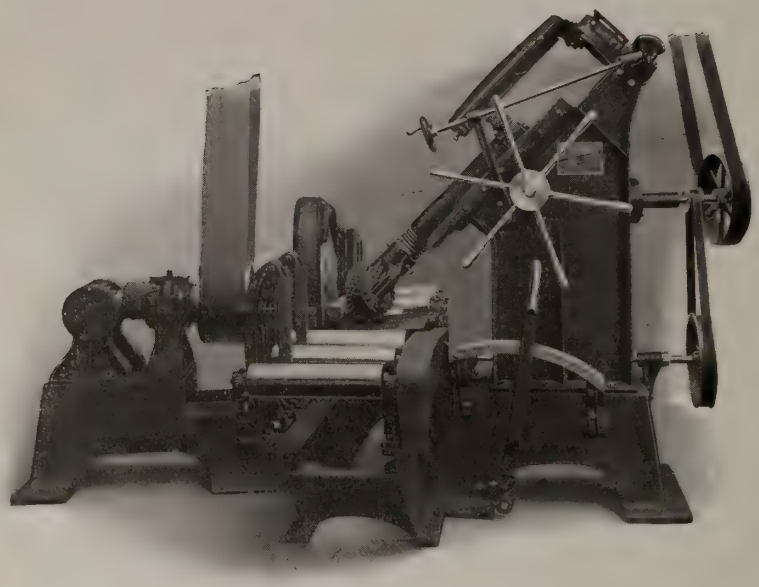
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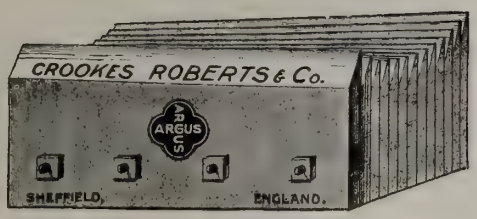
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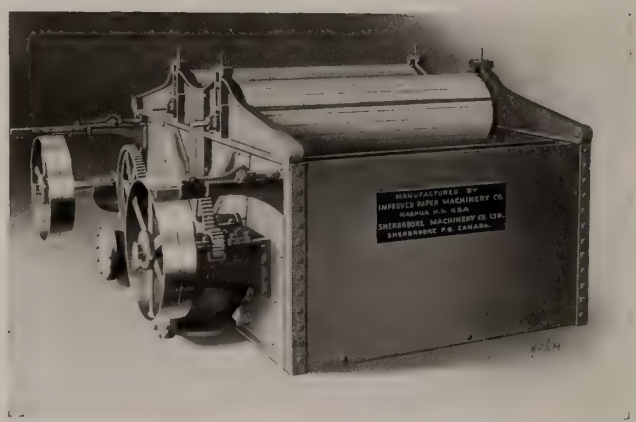
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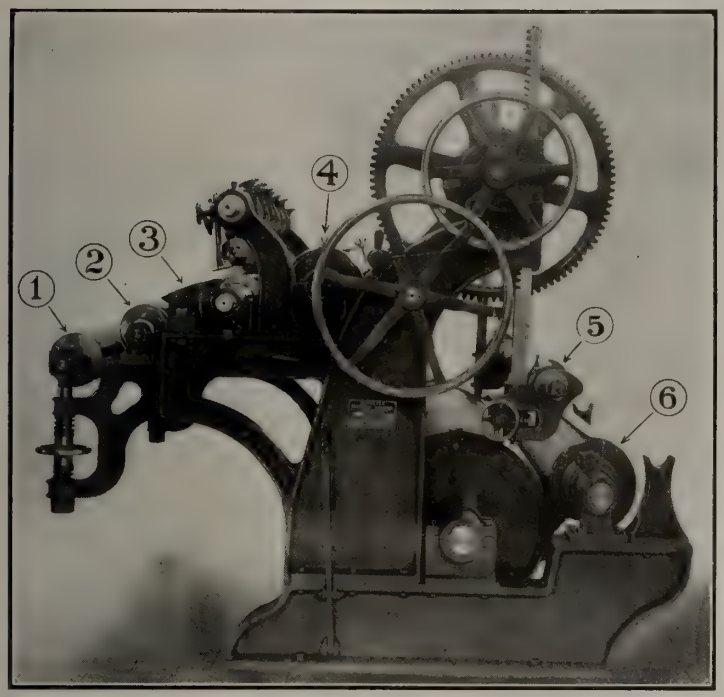
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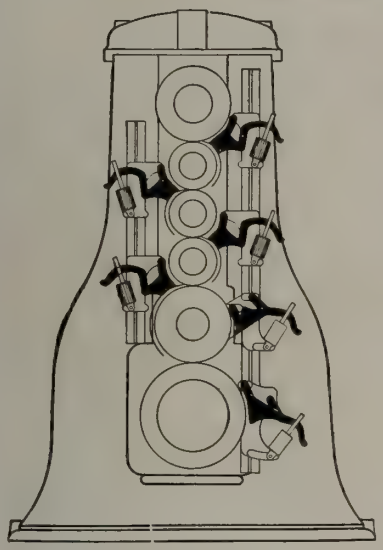
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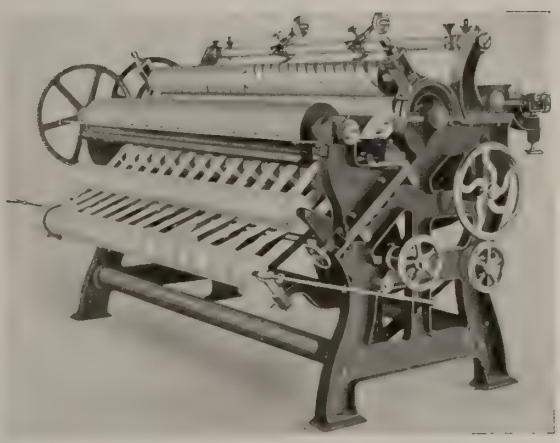
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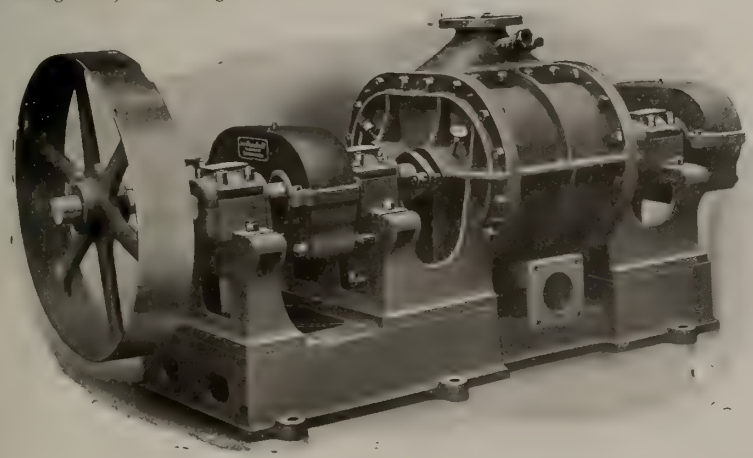
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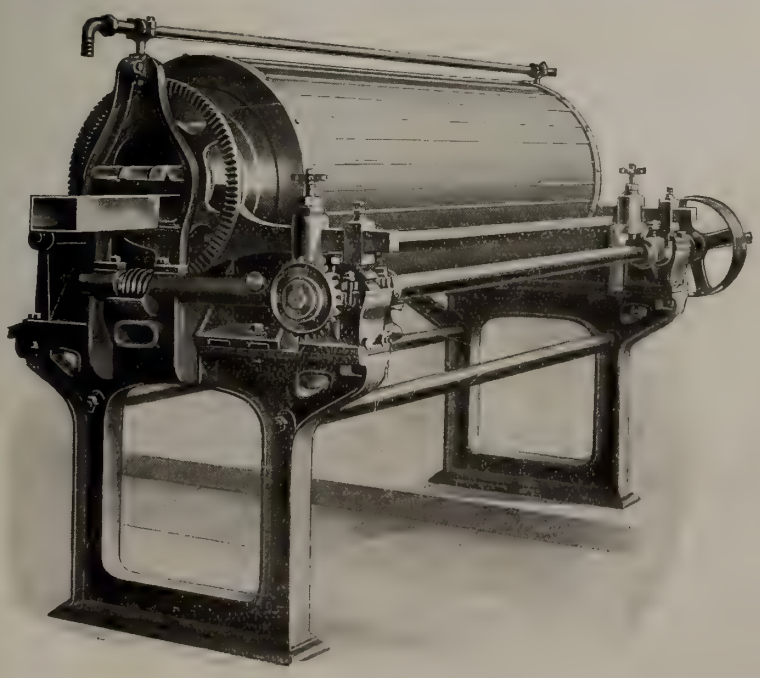
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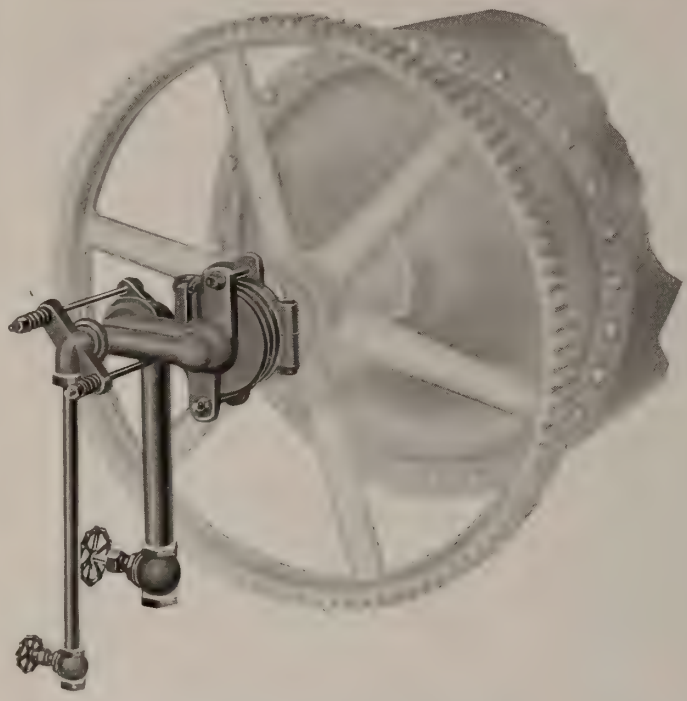
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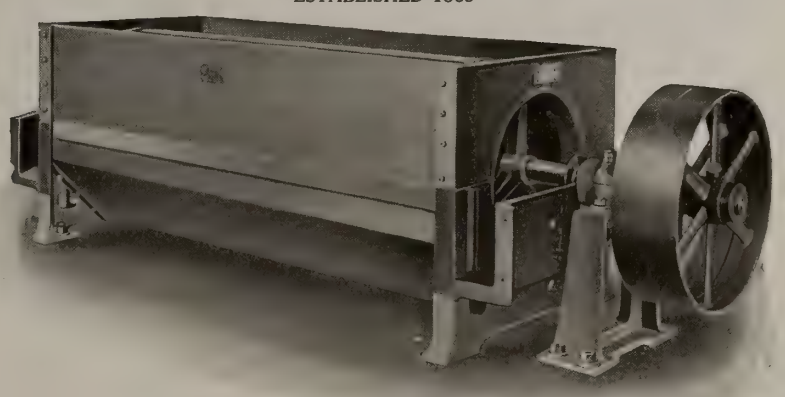
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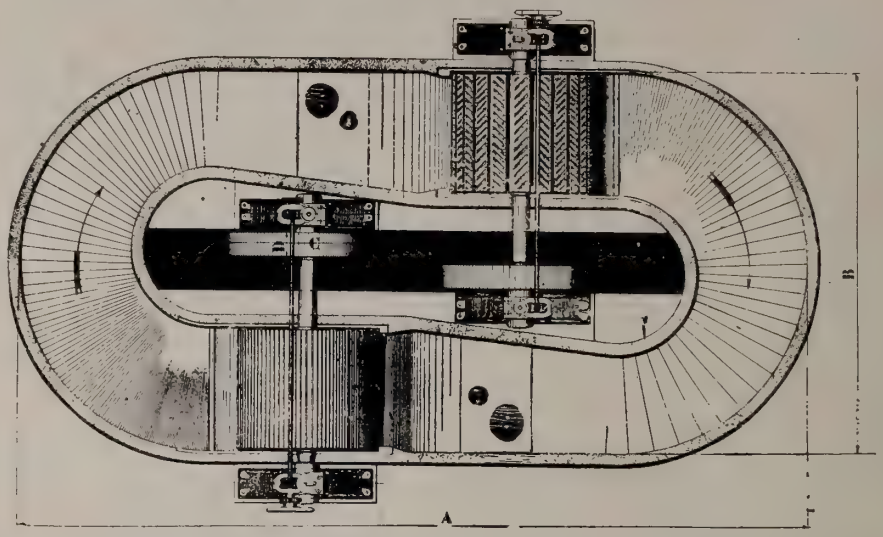
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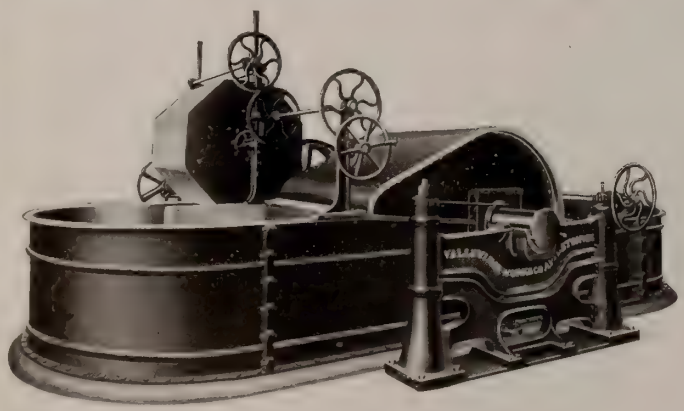
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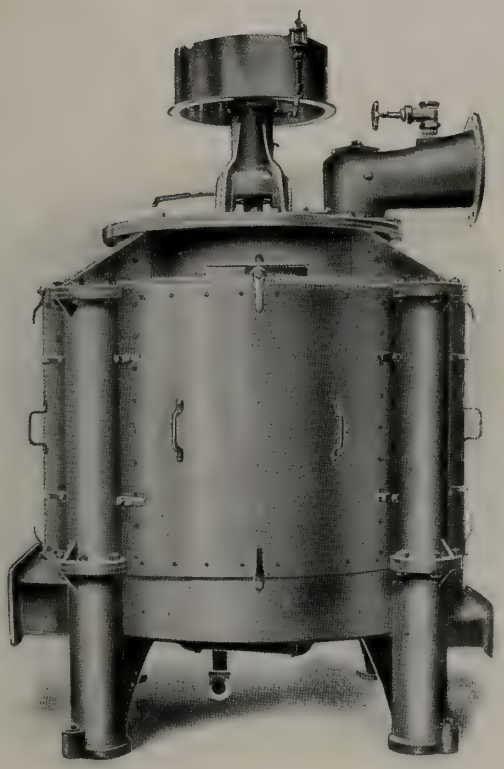
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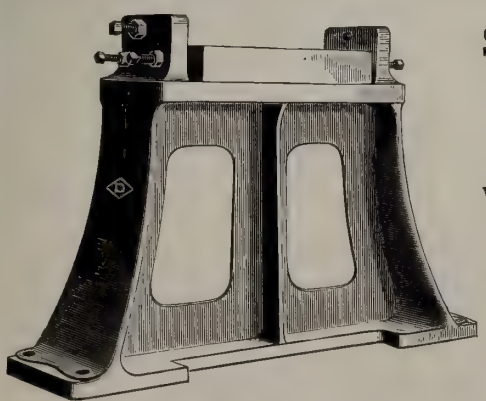
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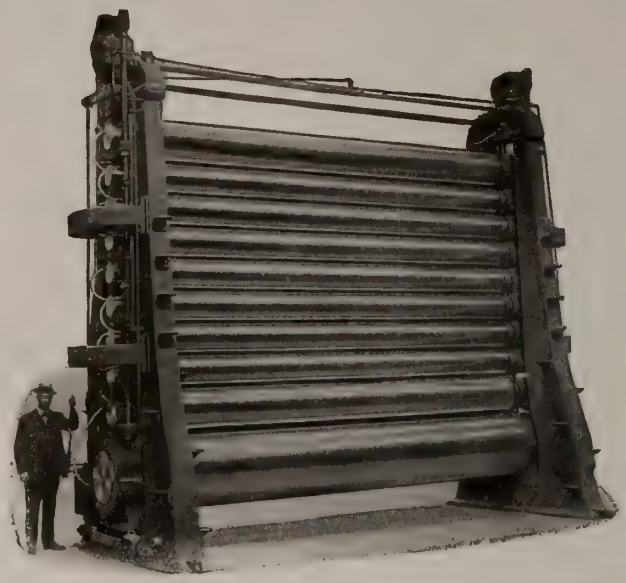
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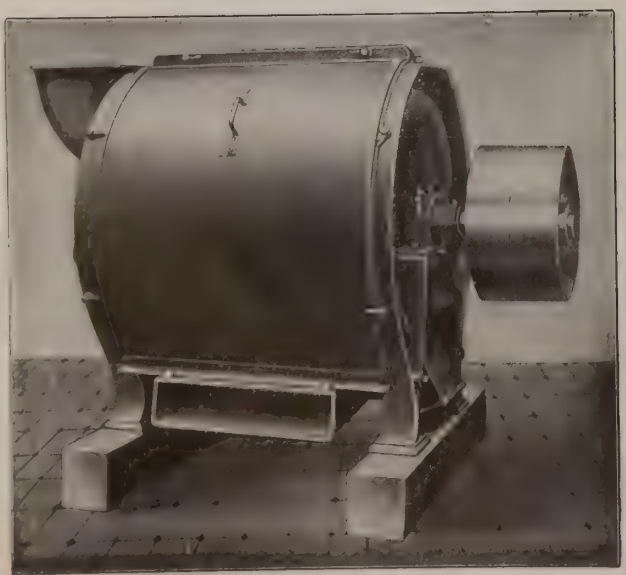
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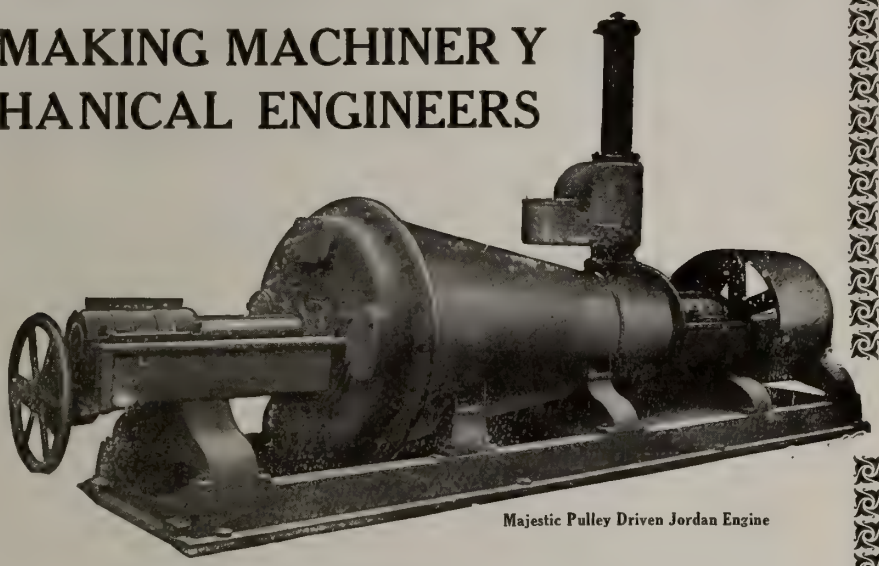
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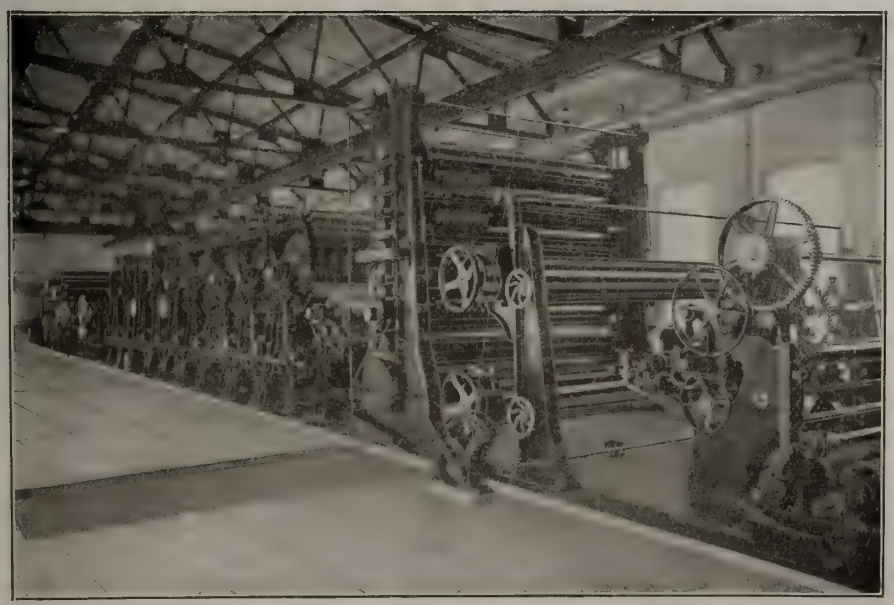
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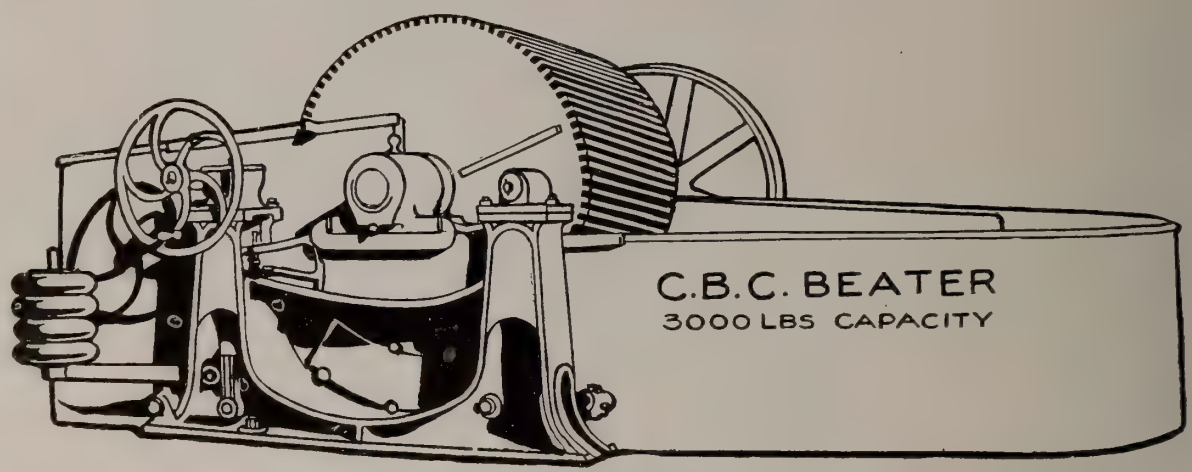
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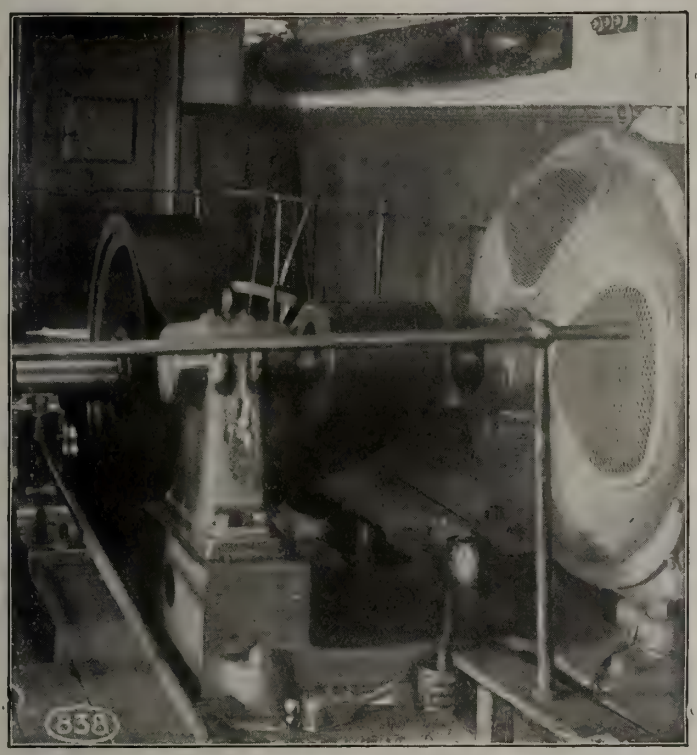
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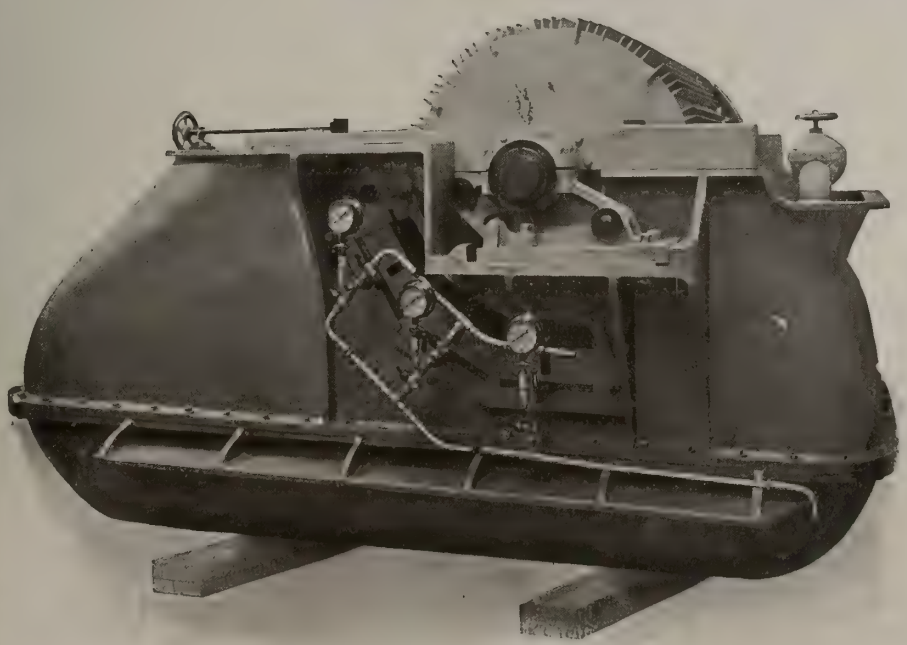
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Pulp and Paper Magazine

OF CANADA

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EDITOR, A. G. MCINTYRE, B.A., B.SC. ASSOC. EDITOR, F. PAGE WILSON

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AN APPRECIATION

The editors of the Pulp and Paper Magazine cannot refrain from using these columns to express their warmest thanks and hearty appreciation of the enthusiastic reception accorded this journal by the industry in Canada, the United States and Europe. Since its enlargement on January 1st we have received hundreds of letters of a highly complimentary character.

For this encouragement we are very grateful and it assures us that we are serving an industry whose appreciation of serious efforts is most ready. We believe that this Journal is giving its clientele very much more than can be found in any other medium serving the field.

For the mill man our technical articles are first hand and extremely practical. For the trade man our markets and news are "red-hot," but the advances so far recorded are but the initial step in the development and expansion which we contemplate.

Our staff of correspondents throughout Canada are being slected gradually and with great care, and we hope to keep in such close touch with the industry that the slightest movement will be immediately noted and conveyed through the magazine to its readers.

We tender our hearty thanks to the many warm friends in all parts of the Dominion as well as in other countries who have encouraged us by the expression of their good will.

NEWS PRINT SUPPLY—CANADA'S SHARE.

The rapid growth of news print mills in Canada and their establishment on such an enormous scale, has led some to question the wisdom of Canadian enterprise, and advance in this regard. These have usually, however, been those who either are jealous for economical reasons, or are ignorant of the resources of raw material, as well as the world's demand for News Print.

The world's consumption at present is eight million tons a year, six and a half million tons of which is made from wood pulp. It is estimated that at the present time consumption is increasing at the rate of 3% per year, which means 200,000 tons annually, or 660 tons daily. Such an enormous figure distributed over the entire paper-making world would but provide a good healthy development, but we may well ask what will be the source of the supply for this increase, especially after a few years.

No country has such resources of raw material in pulp wood as we have. The Province of Quebec alone, Mr. Sweezey estimates, could more than meet the annual increase. Many of the leading paper men, both in Canada and the United States, are outspoken in their belief that the News Print industry of this continent is rapidly moving north. Sir Lomer Gouin has stated that he purposes to make the Province of Quebec the News Print centre of the world, and to that end he is bending every effort and guiding the policies of his Government. The embargo of two years ago, as well as the present lifting of the same in certain particulars, are but further steps toward the realization of his ideal.

Many will label this curious fancy, but the study of a few figures will readily show them that it is not only a possibility but a probability of the future. Other countries are manufacturing to the limit of their resources. Scandinavia cannot increase; the United States is already depending, to an enormous extent

on Canada for her raw material, and Canadian wood pulp in England is the most common raw material in print mills there.

The increase in tonnage of our mills during the last year has been very far in excess of this natural increment, but, as this does not promise to be duplicated, during the present year, the conditions will readily adjust themselves, even though at present there is a slight flurry in the markets. We are doubtless destined to take the major share in the annual increase in the News Print of the world.

PROPOSED ASSOCIATION OF PULP AND PAPER MANUFACTURERS.

Great interest is being manifested in the organization of a pulp and paper association of Canada, as proposed in the last issue of this magazine. Apart from the direct value of such an institution for the reasons quoted at that time, it would undoubtedly be of benefit in other ways. For instance, as one correspondent reminds us, there would be much more likelihood of the various governments actively assisting in applying technical education to the pulp and paper industry, establishing forest products laboratories, etc., if the manufacturers would take united action, and such action could be made thoroughly representative by a strong association better than in any other manner. We hope to be able to record shortly some definite programme in connection with the proposed organization.

QUEBEC VS. U. S. TARIFF.

As a result of the opinion expressed by Secretary MacVeagh, of the U. S. Treasury Deaprtment, to the effect that Quebec had not actually removed the restrictions on exportation of pulpwood from Crown lands, President Taft, in whose hands the matter had been left, denied the right of free entry of Canadian pulp and paper made from such wood. Both the President and the Secretary agreed that the primary purpose of the one operative clause of the Reciprocity agreement which abolished the duty on wood pulp and paper provided that Canada did not restrict exportation on wood, was to induce Canada to remove such restrictions so that wood could be freely imported into the United States for manufacture into paper. The contention of the United States, therefore, is that the Quebec Government's recent action does not in reality remove the restriction complained of, inasmuch as the export of pulpwood is still banned, and that therefore free entry for the product of Crown lands wood cannot be granted. Largely this result has come about through the protests of the American Paper and Pulp Association and large United States paper interests to the effect that the Quebec Government's policy was a scheme to benefit certain Canadian mills without a corresponding advantage to American holders of lands.

In the meantime, Canadian paper mills are not worrying, as is shown by the interviews appearing in our Montreal correspondence. Moreover, there is a more or less general belief that when the Democrats come into full power they will make a radical revision in the entire tariff, which only accentuates the idea, stated in a recent issue that, all things considered, it would have been better for the Quebec Government to have held pat a little while longer.

NEW BRUNSWICK'S PULPWOOD POLICY.

As explained in the last issue, which no fault should be found with the objects which the New Brunswick Government had in mind when it framed its new timber regulations, yet serious complaint may be made as to the manner in which they work out, which is not to the best interests of the province as a whole. It would appear that the regulations have been made largely at the behest of important lumber interests holding large areas of Crown lands. The lumberman as a rule looks upon the cutting of pulpwood as the first step to the destruction of his industry, whereas, as a matter of fact, there is no reason why the sawmill and the pulp mill should not flourish side by side. Comparisons are odious, but experience in other provinces serves to show that a pulp and paper industry, with its expert labor of various grades, brings in its train a development of much larger importance to this country at large than the average sawmill.

The Provincial Government, however, seems to favor the idea of the lumberman and as a result the cutting of pulpwood under the regulations is practically forbidden. Even in the north-west corner of the province, notably in the county of Madawaska, where the timber growth is small and stunted, permits to cut are refused, not because the wood is looked upon as of value for timber, but simply because it is feared that if once a start be made in cutting this for pulpwood, it will be the thin edge of the wedge for the cutting of other lumber.

The result of this policy among the lumbermen is that they go on cutting logs smaller and smaller each year, with a proportionately growing percentage of waste, because in sawing small logs the quantity of slabs, edgings and small stuff left on the tops to rot in the bush mounts up much more rapidly than in the case of large logs.

We would respectfully bring to the attention of the New Brunswick Government the fact that the difference in revenue derivable from the conservative cutting of pulpwood, as compared with a purely sawlog policy would be very materially in favor of the province. In the one case it is a crop which takes forty

to forty-five years to mature; in the other a crop requiring only say twenty-five years before harvesting, and in the case of pulp there would be in addition a certain quantity of sawlogs, say 25 per cent. As we see it, the lumber industry would suffer practically, not at all, while the province would in addition benefit from the erection of pulp and paper mills, with all the development of thriving communities to which they give rise.

ARGENTINE.

The openings for Canadian paper and trade in general in the Argentine Republic are reported on good authority, to be most promising. Recently imports from the United States have advanced at an exceedingly rapid rate, which will of course, prove a slight handicap, offset, however, by the very rapid growth of the total trade in that direction.

There seems to be no reason why Canadian manufacturers should not catch a considerable share of this trade. There is no question of the quality of the product or of the adaptability of manufacturing conditions, so it resolves itself into a problem of selling methods and inclination.

The advantages of this market are numerous, such as the possibility of confining the entire business to one city, Buenos Ayres, with a population alone of a million and a half. Recent tightness in money has of course been felt as elsewhere, but the present prospects are very rosy for the next buying season, and heavy orders should be recorded.

There is no doubt that this offers an opportunity which at present is very good, since consumers in the Argentine prefer British made goods. Their terms of credit are somewhat inconvenient, but the credit is good and banks are willing to advance money on shipping papers.

Print paper is being imported into Argentina in increasing quantities and has now attained the substantial figure of 27,460 tons, representing an increase over 1910 of 3,860 tons; 10 years ago the imports were barely 4,500 tons per annum, but to-day the Prensa newspaper alone consumes 13,500 tons per annum, and this year the number of daily papers has been further increased by the addition of one or two new papers, as well as several late editions.

The customs duty on printing paper for newspapers has been reduced from 2½ to 2c gold per kilo., but notwithstanding the reduction the revenue derived from this source shows a substantial increase. The duty on paper for general printing is 4c gold per kilo., and on wrapping paper, etc., 8c per kilo.

The value of the paper used for newspapers being only 6c. gold per kilo., the duty is considered excessive, and a petition has been presented to both Chambers of Congress for its reduction to 1c. It seems doubtful whether, in the interests of the local paper mill, the request will be acceded to. Argentine books, which are admitted duty free, are printed abroad.

NORTHERN ONTARIO.

In contravention of Dr. Fernow's disparaging comments on soil and timber conditions along the line of the Transcontinental Railway in Northern Ontario, Hon. W. H. Hearst, Ontario Minister of Lands, Forests and Mines, draws attention to the Report of the Survey and Exploration of Northern Ontario, 1900, in which were published the opinions of ten exploration parties sent out by the then government of the province. Each of these parties was in charge of an experienced land surveyor. To each was attached a skilled land looker and timber estimator, and also a geologist. These parties traversed by canoe and on foot practically the entire region assigned to them for examination. A summary of these reports showed that the great clay belt extends from the Quebec boundary west through Nipissing, Algoma and Thunder Bay districts, and contains, according to the estimate, 15,680,000 acres of good land, "nearly all of which is well adapted for cultivation." The estimate of the explorations showed unbroken good land nearly equal in extent to three-quarters of the whole settled portion of the Province of Ontario south of Lake Nipissing and the French and Wattawa Rivers. Since this report was made further and quite extensive surveys have been carried on in that region. The result has been that the original estimate of sixteen millions of acres of good land has been increased until, in the opinion of those who are well qualified to judge, twenty million of acres is nearer the mark. The quantity of pulpwood contained in the region under discussion, according to the estimate made by the above explorers, was 228,000,000 cords of spruce, jackpine and poplar.

When doctors differ it is hard for the mere public to decide. But it is evident in view of the thoroughness with which the work of the exploration parties was carried out, together with the opinions of those who have since traversed the territory, that it contains wonderful resources both as farming and as timbered land.

FORESTRY ASSOCIATION.

A movement is on foot among some of its leading members to dissociate the Canadian Forestry Association from the Forest Branch of the Dominion Government, the two bodies having up to the present worked in unison. Beneath the feeling which prompts the movement, there is no indication of jealousy or irritation, and indeed the entire association is ready to acknowledge the debt of gratitude which it owes to the co-operation of the Government. Those who favor the divorce point to the fact that there are already ten or twelve agencies at work in the Do-

minion looking from one viewpoint or another, to the protection of forest resources and that this important work should be better mapped out and systematized; also that the Canadian Forestry Association should be a purely voluntary, private body made up of citizens of Canada, who should be able to feel free to criticize the Government should such a course be deemed necessary. We believe we voice the general feeling when we say that, so far as the Forest Branch is concerned, no occasion for such criticism has arisen, also that so far nobody has felt injured through any idea of restraint as regards the close connection of the two bodies. Everybody acquainted with the facts will acknowledge on the other hand that it would have been extremely difficult, if not impossible for the Association to have carried on its work, even so efficiently as it has done, had it not been for the ever-ready co-operation and assistance of the Government. While undoubtedly it is well that the Association should continue strengthening its position, with the ultimate aim of standing alone and independent, we believe the majority will concur that such time has not yet arrived.

COLORED PAPERS.

In the United States a tendency is noticeable toward curtailing the number of colors of colored papers, which now acts as a burden on the manufacturer and dealer. With the present large number of different brands on the market, together with the fact that these have to be kept on hand in a dozen or so different colors and weights, the question of storage room becomes difficult. Who is to blame for this condition does not much matter. Perhaps the jobber who desires to accommodate a faddish customer is responsible, but the manufacturer wishes to meet all competition and naturally sometimes goes a step further than united wisdom would indicate. Anyway, the matter is to be discussed at a meeting of the National Paper Trade Association, and perhaps some feasible way of overcoming the difficulty will be discussed.

BOOK.

A few days ago one of the largest Book mills in Canada was forced to bring in a number of cars of Book paper from across the line to meet the orders which it had in hand and could not hope to fill under the present mill capacity.

This seems to be one branch of paper making rather promising, considering the great expansion in this trade, and the limited capacity of our Canadian book mills. News Print seems to have been the premier attraction to capitalists looking toward paper investments. We venture to suggest that in the near future, indeed at present, the best returns will lie rather in the direction of the higher class papers than in News Print, which has possibly developed as rapidly as a healthy industry should. It seems lamentable that there is not in Canada enough book tonnage to meet our own requirements. The situation will doubtless tend still more in this direction as time progresses unless new developments arise. It is understood that two fairly large mills are now planned for Quebec province. There is no doubt they will find the field open and the market ready to absorb their output.

AUSTRALIAN TRADE DECLINING.

That exports of Canadian print paper to Australia are declining is shown by the statement of the Canadian trade commissioner at Melbourne to the Trade and Commerce Department. "The trade discloses the fact," he states, "that Canadian print paper is not maintaining the position held in former years. The cause of diminishing values is hard to define in view of the marked expansion in the industry. More profitable domestic business and the demand in markets where there may be less competition than in Australia are likely factors in the results arrived at. As printing paper is duty free the competition is upon an equal footing, but in quoting upon a c.i.f. and e. basis Continental shipeprs likely obtain a more favorable freight rate. Manufacturers should be impressed not only with the extent of the Australian requirements of paper of all classes, but also, excluding printing paper, with the comparatively small benefit Canada derives from this constantly increasing trade. Canadian paper boards are being introduced, and the outlook for increased returns is promising." The total Canadian export of printing paper in 1911 was $666,015, as compared with $533,055 from the United States.

STRAW PAPER.

In this issue we commence a series of articles by Mr. Schlick, a paper mill engineer, recently come to Canada. He has had wide experience in the manufacture of straw papers in Holland, and will write a series of four or five articles covering the entire field of the uses of straw for paper making, both for box board and writing paper. This is one of Canada's most flagrant wastes and it seems to us most timely that a good discussion of this subject should be brought before the attention of our readers and the public in the hope that it may prove some incentive to development in that line. We are pleased to note that already one mill will soon commence erection at Medicine Hat, but the field is very wide and there is not the slightest doubt that ample opportunity in markets as well as raw material is open for development of this nature.

THE INTERNATIONAL IN CANADA.

One of our esteemed American contemporaries contains the following leading article for February 1st:

"Now in regard to the International Paper Company in the Dominion of Canada? Don't think for one moment that it is not now and has been for some time installing itself there where it will be a power in a few years in the ground wood pulp and the news paper proposition. It owns two great water powers there already and it owns very large timber limits, and when it gets busy in the Dominion of Canada it will come very near showing the Canadian news paper manufacturers what it costs to manufacture news papers, and what daily newspaper publishers shall pay for it."

The tone is exactly typical of the attitude and policy of this corporation towards its consumers and is one of the most disturbing factors in the strained relations between the newspaper men and the guiding spirits of the International. This enormous organization of old and new mills has been gathered together and taken foremost place in the print markets of United States.

As was anticipated, Mr. Philip T. Dodge, president of the Merganthaler Linotype Company, has been chosen as the new president, succeeding Mr. Alonzo N. Burbank, who remains as chairman of the Board of Directors. This insures the present policies and plans of the company being carried out. One of the most notable of these has been the cutting down of the print output by some four hundred tons daily and running on lower grades of stock, in the older and more out-of-date mills, of which they have a number. Included in them, however, is the policy of extending into Canada, which they are doing at the present time, in a vigorous manner.

As our contemporary states in the above quotation, already two locations have been secured on this side. Doubtless he refers to the Grand Falls, New Brunswick, scheme, in which Sir William Van Horne is interested with the International, and the Gaspe properties at Gaspe Harbor, in which Mr. H. A. Hilyard, of Dalhousie, and Mr. Brackley, manager of the Miramichi Lumber Company, Newcastle, N.B., are interested. This latter firm has for some time been supplying wood to the International mills across the line. These two developments promise to go through, but each has many difficulties. The Grand Falls power is a most expensive development. They have a swift river for some miles above the site which will give them trouble in stopping logs, but the worst feature is that a drive of two and a half million must pass Grand Falls within a very few days each spring to catch enough water to get to Fredericton on. This means difficulty for a plant at such a location separating their fifty millions in an impossibly short space of time. The industry will watch with interest their solution of these knotty problems, which in any case will make the wood cost at the mill high. The plant at Gaspe will have only second rate shipping facilities, and has the disadvantage of a difficult country to manufacture in. All of these difficulties can readily be overcome by good business and engineering, but must in any case tend to raise the manufacturing costs.

We most emphatically challenge the International Paper Company, as the above correspondent points out, to show us any wrinkles in costs of print manufacture, especially if they propose to do so in either of the two locations above mentioned.

Our modern mills are rapidly closing up the old and out-of-date small plants of the United States due mainly to an inefficiency developed under their tariffs which offered no incentive other than increased profits, which is not always effective toward employing more scientific methods.

Canada has to-day the finest print mills in the world, the most modern equipment, the best of paper-makers, and business men guiding the policies of her industries, whose allotment of grey matter averages with the best. We do not worry about the International itself extending to our side of the line, but their policy of antagonizing the consumers of their own product is something foreign to us and may it ever be so. Our mills and publishers are on the best of terms, both optimistic and prosperous in united efforts to make Canada a thriving industrial nation.

CHINA CLAY.

China clay shortage is now being felt keenly in United States, and will doubtless soon spread elsewhere. The increased demand as a paper filler, with the calls in other lines, together with lower shipments from the China clay district of Cornwall, in England, seems to be the explanation. The Great Western Railway, which serves that district, is dilatory in providing anything like adequate facilities for shipment to the Port of Fowey.

Many producers are overstocked and find it hard to keep enough capital in hand to operate their pits and linhays. Three hundred thousand dollars is now being spent in increased facilities, but is wholly inadequate to meet the rapidly growing demands of this trade.

This aggravated situation calls to our notice the fact that our industry is mainly dependent on one source for its supply—a most undesirable circumstance for the trade. And we have every promise that the supply from this source will be taxed to its limit to meet these rapidly growing needs. Canada imports yearly about 350-400 thousand hundredweight.

The present situation, which promises to grow more acute, especially in United States, offers an excellent opportunity for the Canadian exploitation at St. Remi, described in last issue by Mr. Jas. A. Ross, their consulting engineer, and for the Canadian talc at Madoc. Immediate expansion would find a ready market in United States and Canada, where paper-makers are complaining bitterly of a shortage. The facilities of English

producers are notoriously inadequate to cope with the present or future demand. A foothold now attained for the Canadian product in United States and at home would soon enable the talc and china clay interests here to strengthen themselves and seek the foreign markets as well. French and United States clay is in very little demand, and Canadians here have a unique opportunity to take an important place in the world's markets for other paper-making raw materials.

FOREST PRODUCTS LABORATORY.

The phenomenal and substantial growth to such large proportions of our Canadian pulp and paper industry has developed new problems for the paper-maker and for those in charge of the conservation of our national resources—conservation in its broadest sense of utilizing the enormous waste by which Nature is disgraced and economy mocked. There is, in our industry, much that might be saved or turned into more useful and valuable products. There are many low grade woods now destroyed which might be turned into a basis for a thriving industry. There are problems and trouble varying with conditions which cannot be solved by the manufacturers with the local technical skill and meagre facilities available. There are variations in modes of manufacture which a large plant seeking dividends rarely ever feels like experimenting with, such as the numerous facts which have been found out regarding grinding in the investigations at Wausau, Wis., by the United States Government. There are prejudices of managers and superintendents to be overcome by dollars and cents arguments. There are ingrained habits and methods learned during apprenticeship which, though often unscientific, wasteful and inefficient, are exceedingly hard to remedy or alter. All this and much more is a becoming field for such a Government establishment to plough.

A number of things have contributed to make the work at Wausau a success:

1. It has been carried on, not only with the support but under the direction of the industry, through a committee of the American Paper and Pulp Association. This committee, composed of such varied interests, has so guided and advised the conduct of the work that every cent invested has brought a direct monetary return to a host of mills. There are a large number of plants now operating on a completely reorganized basis along the lines of the revelations of the work at the Forest Products Laboratory. All on an improved financial basis.

2. The men in charge have not been theorists anxious to determine the obscure chemical properties of cellulose, but practical chemical engineers, who know good pulp from bad and interpret their scientific work in the light of commercial possibilities—real dollars and cents men. For frequently such Government enterprises gradually become a retired haven for eccentric and impractical fossils to pursue unmolested and at public expense some pet theory or hobby of only trifling value. True scientific investigation is the basis of all our industries, but the present need is for a practical application of such knowledge, hitherto held too much as the cherished property of the few. More science lies in the application than in the discovery.

The initiative in the present instance is being taken by Mr. R. H. Campbell, Dominion Director of Forestry, to whom the credit must belong if such a step is arranged for. The pulp and paper interests, as a body, at least, who should be the source of such movements, might have had something of this nature earlier if an agitation had been started. The Department of Forestry and Mr. Campbell are surely earning the gratitude of Canadian pulp and paper men for their timely interest in this connection. This seems one of the many instances where a Canadian Pulp and Paper Association could, by united action, have served the industry as the American Paper and Pulp Association has. To whom has the Department to go but to the individual interests themselves. This is a condition which should not be and which, let us hope, will be remedied by the organization of such an association.

The location of such a laboratory is also being discussed, and unanimous choice seems to fall on Montreal on account of its central location and the many pulp and paper interests located there. A further argument has been that the McGill University has done more along this line than any other institution in Canada, and the step, though short, was in the right direction. In Germany nearly all the large universities have some industrial experimental laboratory supported by the Government. This suggestion must appeal to all interested in the advancement of principles in the industry. Let us hope to see, very soon, a laboratory of size commensurate with the prestige of our industry. Meantime each can assist in the agitation and support the leader in this forward step.

As the question of who shall be responsible for the carrying on of the laboratory, we think that the Dominion Government itself should undertake the work. We need not go lengthily into this matter. As there was an exhaustive article on the same subject in our April, 1912, issue by Mr. H. R. MacMillan, but briefly summarized, there are several reasons why this work can best be handled by the government. The government can more readily secure confidential and important trade information than can a private individual. Work carried on by the government would be known to be disinterested and impartial. Valuable results secured by the government would quickly and freely be made available to all persons, and the good results would be more widespread than if the same information had been secured by private individuals. The best work can only be done by a central and permanent organization. Such an organization would be more likely to be developed by the government than by a private individual.

THE MANUFACTURE OF STRAWBOARD AND STRAWPAPER

By Leo Schlick, M.E.

I.

[In view of the enormous field for straw pulp and paper manufacture in Canada, the editor has arranged with Mr. Schlick for a series of articles giving a complete discussion of the possibilities and process.]

Considering the enormous quantities of straw being wasted during the past years in the Dominion, it is no wonder that the modern Canadians are realizing the qualities of straw as regards its value for pulp and paper making purposes.

In fact, both western and eastern farmers and capitalists are highly interested in the manufacture mentioned and the writer thinks it therefore advisable to place before the readers of this journal an article dealing with the conversion of straw into pulp.

The manufacture of strawboards and strawpaper has been developed long before the manufacture of chemical wood fibre was invented.

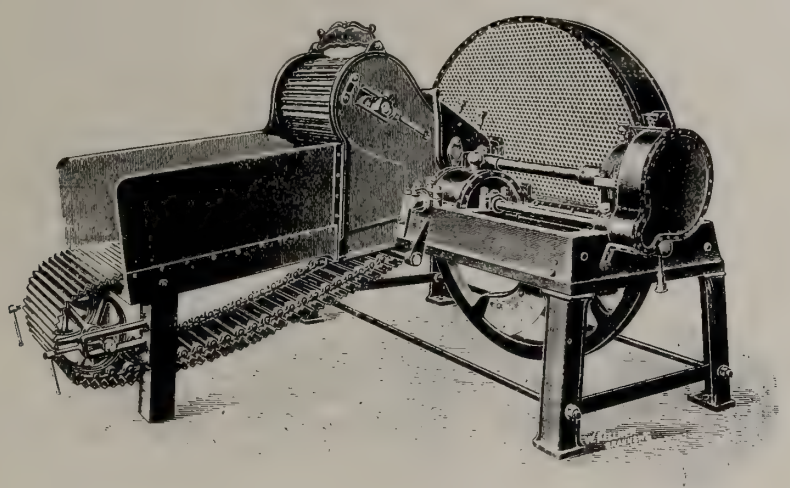
Straw.

To manufacture boards and paper from straw, all kinds may be employed, as wheat and rye, oat and barley straw. Rye and wheat straw are giving the best and largest fibres of good felting powder. Oat straw is something more difficult to digest, on account of the husks, and gives a somewhat weaker pulp than the one of wheat and rye.

Barley straw ranges below the oat straw and its fibres possess the smallest felting power.

Some manufacturers prefer, therefore, to mix different kinds of straw and digest them together in proportions. Other manufacturers treat the straw separately, according to its hardness, and mix the pulp later on, in order to get an equal quality.

The yield obtained from straw in proportions of equal quantities of rye, wheat ,oat and barley, ranges between 38 and 42 per cent. of air dry pulp.



The old French system was to treat the straw in reservoirs with 10 per cent. of lime, for about ten days, until the material was softened, then converted into boards and papers. This system, however, requires much labor, space and time, as it has not yet come to a very prosperous development. The writer saw it in use in small French board and paper mills, producing two to eight tons of straw boards per day.

We have to consider two systems of manufacture.

The first and mostly used one for boards and yellow papers is to digest the straw during three to four hours under pressure in rotary boilers, with 6 to 8 per cent. of lime.

The lime boiling process gives the pulp its specific yellow color.

The lime, serving as a loading material, remains partly in the pulp.

The other process is the manufacture of high-grade bleached straw pulp after the sulphate process. Pulp of the latter is, of course, more expensive to manufacture, but renders best services for the manufacture of writing paper, as it gives the paper a better quality.

We will go over both systems of manufacture, starting with some notes about raw material.

Preparation of the Straw.

New mills will have to consider that the straw has to be stored after the harvest time in quantities, allowing them an uninterrupted working the whole year round.

Therefore, the Dutch and most economical practice is to press the straw on the form in balings and wrap the latter in wires.

The compressed surface of these pressed balings prevents the straw from getting wet and useless.

These balings may be easily transported by rail and stored for many months.

The first step in the manufacture is the cutting of the straw in lengths of ½ inch to 1 inch by means of a straw cutter.

Modern cutters are built for large capacities and work up five to twenty tons of straw per hour.

There are, however, larger machines of a high capacity, and it is always preferable to install machines of this kind as large as possible.

Large units have a higher mechanical efficiency, save time, labor, space and power, though their price is somewhat higher.

The main question in installing an apparatus must always be: Is the machine efficient?; not, how much does it cost?

An efficient machine is an improved machine, and an improved machine has cost a lot of money to design and test it. Therefore it has to cost more. But it always pays for itself. This principle has been a secret to many manufacturers, who have figured out that the one type cost $2,000, two $4,000, but the machine of improved design $5,000 for the same output. They went and bought two small ones, saving, for the moment, $1,000 and paying ten times more for labor within a couple of years. So much about efficiency.

The straw cutter in figure 1 is connected to a table, upon which the straw is placed. The table is provided with a conveying system, bringing the straw between a press, the latter consisting of two teethed rolls. The straw is held and transported by means of the rolls mentioned, to a revolving disc, fitted with steel knives, the latter cutting the straw in equal pieces.

Straw contains generally 1 per cent of grain and a special sieving device is connected with the straw cutter in order to screen these grains out.

The straw is now ready to be elevated in bins above the rotary spherical or oblong boilers.

So-called straw cutters have been built with small efficiency, in order to remove the knots from the straw, but careful tests have shown that they are not of much use.

Although it may be possible to design a more successful machine, the latest straw mills are, in most cases, not equipped with such dusters, but there are excellantly built machines to reclaim 1 per cent. of the grain contained in the straw.

The quantity of husks has been determined by carefully weighing a certain quantity of raw material, cutting out the husks with sheers and weighing the remainders.

It has been found that wheat contains 9.7 per cent. of husks, rye 8.8 per cent. of husks, the dust and sand amounting to 3 per cent. of the weight of the straw.

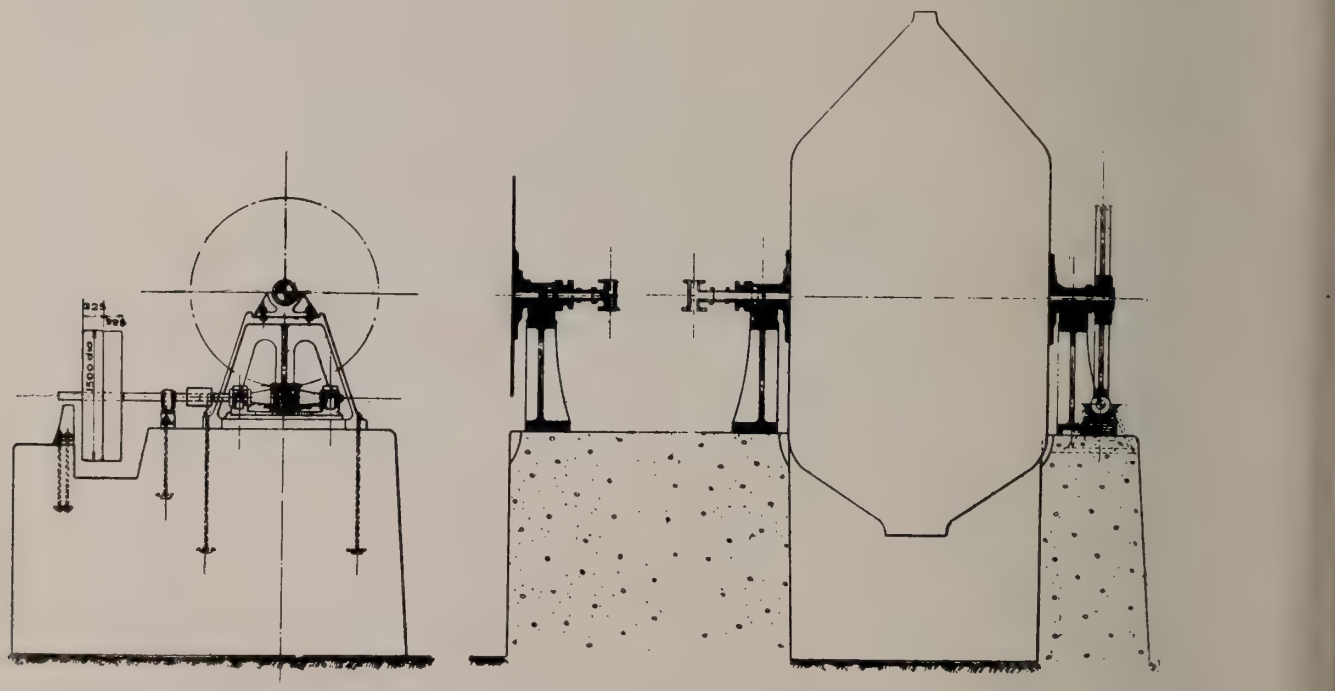
Because it is impossible to remove all the husks before the boiling process, they are successfully screened out on flat strainers, the latter being placed before the board or paper machine.

Lime.

A rough check of lime solution sufficient for the manufacture of yellow ordinary boards and paper is to dissolve powdered lime in water, and to measure its density. But the mixture of lime and water has to be well stirred up, if not, bad results will be obtained.

Take a graduated glass of a volume of about 1½ to 2 liters, and determine its weight carefully; then pour in it some of the lime water you are using, until the one liter mark is reached. The amount of lime (CaO) in grammes per liter is then found by weighing again glass with limewater.

Degrees Beame.	1 liter weighs grammes.	1 liter contains CaO in grammes.
1	1007	7.5
2	1014	16.5
3	1022	26.0
4	1029	36.0
5	1037	46.0
6	1045	56.0
7	1052	65.0
8	1060	75.0
9	1067	84.0



10	1075	94.0
11	1083	104.0
12	1091	115.0
13	1100	126.0
14	1108	137
15	1116	148
16	1125	159
17	1134	170
18	1142	181
19	1152	193
20	1162	206
21	1171	218
22	1180	229
23	1190	242
24	1200	255
25	1210	261
26	1220	281

at 15 degrees C. "Blatter."

Lime Preparations for the Manufacture of Lime Treated Pulp.

The preparation of lime lye has to be done in the storey above the digesters. The quantity of lime requird is six to eight per cent. of the weight of the straw. The quantity of lime which can be dissolved in water is relatively small to the quantity of lime needed to digest the pulp. A large quantity has therefore to be kept suspended in the water and this has to be done by means of an agitator. But, being very difficult to pump such a lye special chests with agitators have therefore to be placed above the digesters. Here in a compartment the lime will be cleaned and weighed. The cleaning is done by means of a long trough provided with baffles and a rotary sieving device. Where limestone is cheap it is advisable to burn it in kilns near the mill. In burning the lime in the mill the manufacturer is sure to obtain an equal quality, is sure never to get half-burned lime and saves besides a good deal of money. After the limestone is burned it has to pass a ball mill where the stone is ground to powder. It is, of course, a matter of calculation as to whether the kiln will pay and depends on the amount of lime needed per 24 hours.

The Digesting Process.

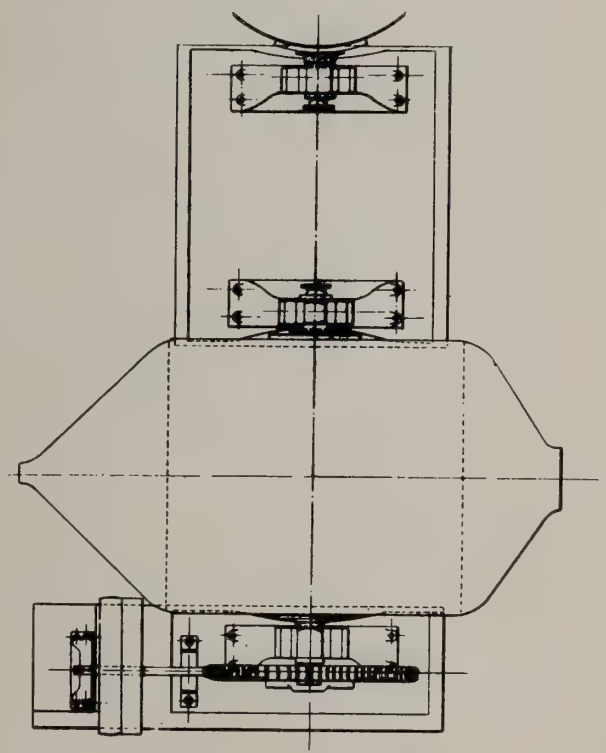
For digesting straw pulp with lime rotary spherical boilers as well as oblong cylindrical are employed. In order to save steam the digesters are to be connected in series of four. The time of boiling employed is to be taken according to pressure used, and ranges between four and six hours, that means if four digesters are to be emptied in 24 hours. Before dumping one boiler its steam will be blown over to its neighbor, having been filled. The steam pressure employed ranges between 45 and 75 lbs. gauge pressure. Long cooking time in connection with low pressure gives the strongest fibres of best felting power. Short cooking with higher steam pressure gives a softer and shorter fibre. Rotary spehrical boilers contain from 1,500 to 2,000 lbs. of straw, and revolve with one-half to two revolutions per minute. The hollow steel journals are connected with water and steam pipe lines. According to the cooking time employed the boiler has to be filled so far with lye that the condensing water may find room enough. In revolving the boiler the straw keeps constantly frictioning and rubbing in itself to the advantage of digesting, but also mixes and equalizes the lye. The suspended lime goes more and more in solution and the digesting progresses until the steam is shut down.

Large pulp mills, however, employ nowadays rotary oblong boilers of the type figure two illustrates. The capacity of this digester is considerable and ranges between 6,000 and 8,000 lbs. of straw. This kind of digester is preferably blown off in tanks. Because it is necessary to blow off with 25 to 45 lbs. steam pressure, but also to utilize as much heat as possible mentioned, washing and blow-off tanks are provided with a waterpower system to condense the steam. The steam is also partly carried to the condensers.

Before closing this chapter let me say that it is impossible to treat wheat straw grown in Manitoba in the same way as straw grown in Ontario or Quebec. As different as the quality of the grain, as different is the quality of the straw. Climate, bottom, and time of harvesting influences the quality and hardness of the straw considerably, and with them the digesting. The practical pulpmaker, however, will overcome these difficulties.

Preparation of the Pulp.

The Dutch and German practice to prepare the straw pulp is to convey it to large kollergangs and to beat it in there until the fibres are loosened. Large kollergangs have a capacity of five to seven tons daily, need 10 to 15 horsepower and revolve with 12 to 14 revolutions per minute. Enclosed cut shows a modern kollergang with high trough, and is underdriven. Stones are nowadays used in granite or basalt. The pulp is treated in the kollergangs during 20 minutes to three-quarters of an hour and conveyed to beaters.



The beating time in a modern beater is to be considered very short and is not longer than 45 minutes. The beating has to be done with large knives at a low specific pressure. The modern beaters are very different in the design from the common constructions. The bottom has to be inclined. This inclination of the bottom of the tub is such that the pulp circulates very rapidly in the tub. It saves not only power, but needs no stirring up.

It is evident that in order to transport the pulp its low traveling speed has to be speeded up by the roll to the velocity of the latter. This amount of power is theoretically constant for a certain amount of pulp in a certain time after the formula

$$\frac{m\ v^2 \times je}{2\ g}$$

The better the efficiency of the roll as a transportation wheel the less power is required to bring the pulp in motion. The centrifugal force gives the pulp a considerable pressure behind the roll and if this pressure is used in the right way the velocity of the pulp in the tub can be increased considerably. In increasing the velocity of the pulp in the tub it enters the spaces of the roll with a larger velocity and therefore decreases the power consumption of the beater.

In the continuation the writer will treat the continuously running pulp perparing system.

THE EFFECT OF CHEMICAL RESIDUES IN PAPER UPON PRINTING INKS

By Harry A. Maddox.

Printers occasionally experience troubles with paper consequent upon the retention therein of residues from certain of the chemical processes which the material undergoes in its transition to the finished stage. Lithographers are the chief complaintants, for their methods of production are based on chemical interaction, whilst they use color inks which in many cases are subject to reaction under certain conditions. Unfortunately, the printer is far too ready to shelve the blame for much of his own faulty workmanship upon the paper-maker. One thing is certain, and intellectual printers realize it, that better and cheaper printing paper is now turned out than ever before. At the same time it is probably true that cheaper and much worse paper may now be produce than hitherto. The buyer himself, if he knows anything at all about the commodity he buys, must be aware that the price he pays governs the quality of the product. If he wilfully purchases paper at a price inconsistent with quality and character, he lays up immediately a store of trouble for the printer. We restrict ourselves mainly to lithographic papers in these comments, the letterpress printer experiences little or no difficulty with any grade of stock.

There are certain defects in paper which make themselves known immediately the job commences running on the lithographic machine, such as fluff, lint or loose fibre and loading, uneven cutting, variation in finish, weak or soluble coating, creasing, cockling, etc. For these and like defects, the paper-maker is certainly to blame and generally receives it. So far as chromo-lithography is concerned the paper may be seriously defective in a manner which does not exert its influence until the printing has been completed. Or again, the development of the trouble may be so gradual, yet occur during the printing, that the lithographer fails to perceive the effect until too late. Cases of this description happen more often than is generally thought and are due mainly to chemical residues in the paper reacting with affinities in the ink. A consideration of the factors on either side may thus prove profitable to both paper-makers and lithographers.

In lithography, an extensive range of different classes of paper are called into use, including, in addition to ordinary chromos, enamels, lithos and S.C.s, such grades as grease-proof, vegetable parchment, flints, surfaced coloreds, cheque papers, pasteboards, etc. The paper-maker will undoubtedly admit the probability of certain of these varieties containing residual chemicals, in however slight a degree, from the special treatment which several of them necessarily undergo.

Chief amongst the offending residues may be mentioned alkalies, acids, sulphur, sulphides or sulphur combinations, traces of antichlor, iron or lead impurities, organic residues from mechanical wood. On the printing ink side we have sulphur, lead and iron compounds, chrome, alum, and mercuric bodies, while the surface from which the printed impression is received may be either carbonate or lime and magnesia, zinc, aluminium or indiarubber.

As a general rule, printing paper, and especially litho stock, is turned out in a neutral state—that is, free from any trace of either free acid or alkali. Considering that fibrous paper-making material is at first subjected to a somewhat severe alkaline treatment and later encounters acids in one form or another, it is possible that occasionally makings of paper are not entirely free from chemical residue. Perhaps the most common, and certainly the most injurious form of residue, is sulphuric acid. This may be introduced into the paper in various ways. If the bleaching is hastened by means of dilute H_2SO_4, inefficient washing or badly calculated proportion of antichlor results in free acid in the finished stock. Again, the precipitation of resin is effected by addition of aluminium sulphate. The resinate may have a tendency to set free traces of sulphuric acid from the sulphate, which would then find their way through to the finished product. Grease-proof papers are sometimes parchmentized with sulphuric acids, traces of which may remain unless accurate neutralization is effected. Another source of free acid is blanc fixe, used as loading and for coating mixtures. Being artificially prepared by treating a solution of barium chloride with H_2SO_4 or $Al_2(SO_4)^3$ there is a danger of free acid remaining as the results of inefficient washing of the precipitate. The most simple test for free acid in the paper is to make up a solution of Congo red in water, a drop of which applied to the paper will turn blue in the presence of free acid. Alum has a tendency to react as an acid, and if present in excess, as it may easily be, in the case of coated papers particularly, may be regarded in exactly the same light as free sulphuric acid. Alum is added to the sizing for tub-sized papers, while it is also a common constituent of the coating solution for chromo and bright enamel stock. It must be remarked, however, that alum does not test acid to Congo red, but it reddens litmus paper or solution. Another test for free acid may be mentioned, which can be used quantitatively. Strips of the paper to known weight are extracted in warm water. The extract is then titrated in the usual manner with decinormal potassium hydrate, in the presence of phenol phthalein as indicator. The phenol phthalein is itself colorless, but with alkali it changes to an intense red, while it assumes its former state of colorlessness on adding acid in excess. From the number c.c.'s of potassium hydrate required, the amount of free acid may be calculated.

The effect which free acid in the paper has upon chromo-lithography is serious in the case of certain pigments, but the first reaction is probably upon the printing surface. The basis of lithography is the separation of the printing surface into two areas, the one which is required to create an ink impression being prepared to be sensitive to greasy compounds, hence water-repellant, while the non-printing area must refuse grease and receive and retain moisture, i.e., a film of water. The effect of acid upon this is to attack both areas, creating a scum upon the non-printing area and eating away the edges of the printable area. Much trouble and inconvenience may thereby be occasioned for the lithographer. In the case of coated papers carrying a little acid augmented by a badly-fixed clay surface, the powder detaches and fills the pores of the printing stone or plate, with disastrous results to the work.

Coming now to the pigments, ultramarine is partly bleached in the presence of acid, the effect becoming visible only after the printing has been completed. Pure blue (from green and caustic soda) is affected in like manner, while many of the cheaper aniline colors, which are largely introduced into poor inks, would rapidly deteriorate in the presence of free acid. The same reasoning applies to certain of the lake compounds.

Cases have occurred in which chromo prints executed with vegetable or organic coloring materials have greatly degenerated in color value, although apparently both the paper and the inks were quite reliable. The basis of such trouble is usually the presence on the paper of residues from the bleaching process. The active agent in the whitening of the pulp is chlorine in a free state. It is but rarely that the lithographer has to deal with paper containing traces of chlorine, although it is quite possible that evidence of it may be detected in a paper direct from the machine. Chlorine is so sensitive to reaction that it either immediately escapes from the paper on exposure, or else combines speedily with bases in the paper to form such salts of sodium or aluminum chloride. If, however, there is some suspicion of a bleaching agent in the finished paper, it makes itself visible by weakening the color of the print or creating a piebald appearance. Free chlorine is usually tested for in the following manner: A portion of the paper is extracted with cold water in a test tube and to the extract is added a solution of potassium iodide and a little starch liquor. In the presence of free chlorine a blue coloration is produced. Residues of bleaching powder and traces of hypochlorites are capable of exerting a most disastrous influence upon chromo-lithographic work. They also have a decided tendency to rot the paper and cause it to go black in color.

Iron spots or compounds in the paper may be produced during manufacture in various ways. Scraps and particles often become detached from the knives and bars of the breaking engine, beaters and refiners, which, however, may be composed of alternative composite metals, as brass, copper, phosphor-bronze, etc. Iron and other metallic impurities also result from rusty stuff chests, waterpipes and tanks, sand catchers and strainers. Moreover, the water supplied to the mill may be rich in iron salts—a grave fault. Again, the poorest grades of aluminium sulphate contain sufficient iron to injure a good class of printing paper.

The spots and stains are usually developed and intensified during the drying, particularly if the web comes up damp and meets too sudden a high degree of heat. It is quite possible, however, that the paper may come to the lithographer apparently pure. The trouble is then encountered when a development of dark spots, black, chocolate, buff or bright in color with certain pigments sets in. These spots develop in color during the drying of the pigment on the paper and intensify progressively. Such pigments as Naples yellow, Chinese yellow, carmine, scarlet lake, orange, mountain blue, etc., react with iron and are therefore certain to create trouble if iron is present in the paper. Again, such mercuric iodide pigments as geranium red and scarlet iodide (pure scarlet) would speedily be affected by traces of iron. When chemical reaction with the pigment sets in, the disfigurement of the sheet is intensified and becomes most obvious. Apart from its presence in this form, iron may also be present in the paper as a compound with resinous and fatty matters, or in combination in excess with the clay added to the beater. The result of its introduction in this form would be the development of a dirty yellow tinge in the stock.

A test for iron in paper may appropriately be added. Digest thoroughly a portion of the suspected paper with a solution of hydrochloric acid to which has been added a drop or two of nitric acid. After complete extraction of any possible iron a little potassium ferrocyanide solution is added to the extract, which turns to a blue shade corresponding in intensity to the amount of mineral present in the paper.

Amongst the most damaging forms of impurity to be found in paper for lithography is sulphur, in the form of sulphide. It is principally to be found in the cheaper grades of paper containing poor sulphite pulp. Sulphur residues result from inefficient cleansing of the pulp from the bisulphite boiling liquors. Other ways by which sulphur compounds are carried forward into the finished paper may be mentioned, for instance, excess of bleach liquor are in many mills neutralized by means of antichlor. Sodium thiosulphate usually forms the antichlor, and if used in excess there is a tendency for precipitations of sulphur to remain upon the fibre. It is also possible that the water used at some stage in the making of the paper may have become contaminated by sulphuretted hydrogen from decomposed organic matter. The influence of H_2S upon lead compound is well known, and as many of the lithographer's pigments contain lead it is most disastrous to encounter paper with traces of sulphuretted hydrogen.

Cases have occurred in which traces of sulphur compounds have been introduced to the paper through the coloring matter employed for dyeing. Ultramarine contains sulphur as a component part, usually so bound up that it cannot act separately. Extremely poor grades of the color, however, have often a small proportion of uncombined sulphur which might easily find its way into paper dyed with the color.

The chief effect of sulphur compounds in paper is to blacken the pigments which contain lead or copper, while they have a deleterious influence upon many of the aniline coloring matters from which are produced a considerable number of cheap printing inks. The lithographer's colors affected by sulphides or sulphur residues are: Naples, Chinese, chrome and patent yellows, verditer, mountain and intense blues and orange chrome. Bronze powders, which contain a large amount of copper in their composition, are rapidly blackened when in contact with reactive sulphur bodies; hence, the paper which is sold for interleaving bronzed work should be free from traces of sulphite liquors.

Sulphides in paper may be detected by the characteristic smell of rotten eggs which is created when a portion of the stock is gently warmed in a test tube with weak sulphuric acid. Another test is to bring a piece of filter paper soaked in silver nitrate over the mouth of the tube containing the suspected paper in sulphuric acid. If sulphide is present in the stock a metallic deposit will be formed on the filter paper. Soluble sulphides and sulphites may be detected and quantitatively determined by the usual method of cold water extraction and titration with decinormal iodine solution.

Alum in coated paper occasions much trouble to the lithographic printer. We have already remarked upon alum and its acid-like reaction upon pigments; but when present in excess in the coating mixture applied to the body paper for chromos and enamels, it has an even more serious reaction upon the stone from which the impression is printed.

Alumina constitutes about 40 per cent. of kaolin or China clay, while alum itself is frequently added to the glue as a preservative, although formalin is preferable. The presence of excess of alum to free alumina in the coating is rapidly asserted whilst the paper is being printed, particularly if the coating film is at all loosely fixed or inclined to solubility. Particles of the powder become detached and lodge in the pores of the printing surface. This clogging creates trouble with the inking and damping arrangements and in a short time reacts with the surface constituents of the stone or metal plate used for printing. Alum water is one of the lithographer's dopes for creating a very sensitive surface. With incautious use, it carries this effect too far, and causes other parts of the surface to take ink and print a scum. This is precisely what happens when a coated paper containing excess of alum is being printed. Dirt and scum arise and the printing surface becomes filled up. The trouble is one of the most frequent which are encountered when working on coated stock, hence it behooves the maker to carefully control the coating of lithographic chromos and bright enamels.

As the paper-maker is well aware, the most probable reaction of printing papers which are otherwise than neutral will be alkalinity. Excepting those papers produced from sulphite boiled material, the majority of the processes which the raw stuff undergoes are strongly alkaline in their nature. The water supply, boiling, bleaching, casein sizing or coating mixture may any of them leave traces which become evident in the finished paper. Sodium sulphate used as an antichlor after bleaching also leads to alkalinity. Casein, dissolved for use in such alkalies as caustic soda, ammonium or borax although usually well cleansed from residue may yet impart alkalinity to paper sized with it or bearing a coating containing it. To the color printer the presence of alkaline bases is disastrous, for several of his pigments are extremely susceptible to their action. Excess of caustic soda or potash rapidly attacks and destroys the shade of Prussian blue, whilst ammonia (which may be met with in coated papers) effectively bleaches this color. Pigments containing acid are instantly changed in hue when the paper has an alkaline reaction. The chrome series of pigments, which constitute a very important range to the lithographer are deepened or reddened by alkalies. Borax posessses a fading action on many colors, but is less vigorous in its attack than any of the afore-mentioned bases.

In conclusion, a few remarks may be added concerning the effect of organic residues in paper upon printing inks. It is the printers' own fault in almost all cases where he works on a paper containing mechanical wood pulp. Evidently he is trying to effect economy by the use of cheap stock. However, small may be the proportion of M.W.P. introduced to the pulp there is instantly embodied the elements of destructive organic reaction. The lignin and other foreign matter now incorporated, absorb oxygen, and the paper loses its tone. Incidentally the inks are changed in hue and often almost entirely fade away. The remedy is obvious and remains with the lithographer.

If glue constitutes the binding adhesive in a coating for chromo stock, it should be pure and of high grade. The poor qualities are apt to contain organic residues which attack color pigments. Again, the smell emitted is most obnoxious.

During the bleaching process certain organic noncelluloses in the pulp become transformed and in an active state find their way through to the finished paper, where there is every probability of reaction with the lithographer's colors, particularly the aniline series.

The more the paper-maker understands the troubles which the printer daily encounters with the paper he uses, the better able will he be to cope with them and offer for the high-grade work a class of stock carrying a guarantee of purity and security against any trouble from paper versus ink.—"Paper Makers' Monthly Journal."

CHEAP BOND VS. TYPE.

The introduction of the cheap, so-called "bond" papers in this country a few years ago has worked more injury to the manufacturing printer than any other paper stock ever presented by the paper jobber, according to a printer whose name cannot be given.

It should be plainly stated that "bond" papers cannot be made by the manufacturer and sold by the jobber for a less price than 11 cents a pound.

Yet in the face of this statement the market is glutted with innumerable so distant bond papers and all working to the detriment of not only the jobber, but the manufacturer of printing.

No doubt the latter has discovered the important fact that these cheap sulphite stock papers are the greatest enemy of type ever introduced, as by their harsh surface and inequality of their makeup, type is made to suffer—likewise the bank account of the printer—and the typefounder is the gainer.

According to this observing printer, if the printers in using these cheap papers do not take into consideration the wear and tear on type—here is where depreciation of type cut a figure—and refrain from charging it into the job, they are the loser in every instance.

Every job cannot be electrotyped, and granting that it can, what would be the "life" of an electro from hairline type, the type called for and used so often in work specified on these cheap bonds.

Many printers have taken up this matter with the purchasers of printing and secured their consent to use a "flat" paper in lieu of these six-cent sulphite bonds.

Let the printer take this matter well to heart for mutual protection—the customer as well as himself.

ENVELOPES FOR SMALL PURCHASES.

The clever designs on envelope done in two and three colors that will appeal to the eye may soon replace the ordinary wrapping paper for the small items purchased in the department stores, is told by one using with success for more than a year. While the expense is greater than for the ordinary lighter weight wrapping paper, the benefits derived are many.

"It is obvious that the envelopes we use are very satisfactory, especially to the women shoppers, as they make a very neat package. Furthermore, they facilitate the work of our clerks, as it is much easier to place such items as handkerchiefs, trinkets, etc., in one than to use wrapping paper and tie with twine. We have made it a practice to vary the style of figures that appear in colors. In the various sections where the envelopes are used we find it advisable to assemble the different varieties so that customers may have their attention called to other departments. We would not care to state the quantity used of these envelopes. Another feature that we have introduced is to have a modest card on wrapping papers."

THE TESTING OF PAPER

By James Scott.

The condition of the water available for the use of the paper-maker is a subject of the greatest importance to him. So delicate are chemical reactions that a great deal of material may be spoilt (though the effects may not be at first visible) owing to the salts in the water combining with the ingredients of the pulp. Even rain water, which is considered to be the purest form of the fluid, is often liberally charged with carbonic acid (carbon dioxide), derived during its descent

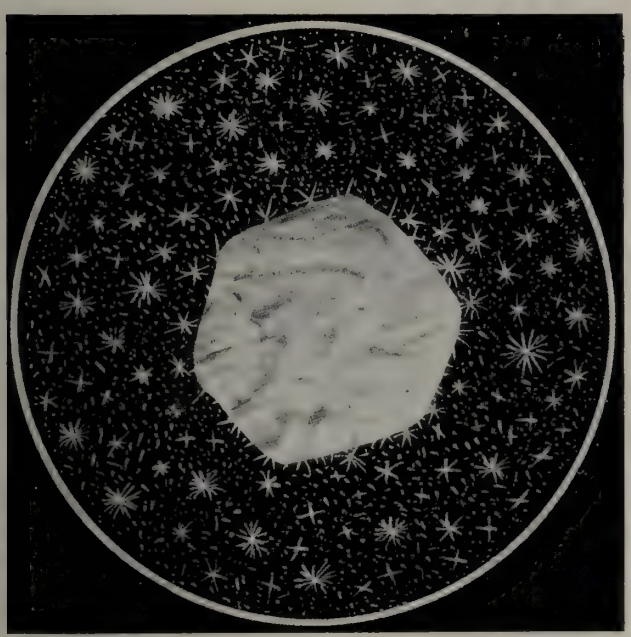


Figure 1.

through smoky or breath-laden districts; and this gas is a very potent one in many ways.

Whatever may be the original source of the water used in a mill, it must have passed through, or over, ground from which it is possible for this medium to extract such substances as lime, magnesia, iron, and sulphuric acid. Organic matters, such as vegetable debris, insects, animalculae and flinty diatoms are generally filtered off. If any are present they can be easily detected by looking through a glass jar full of the tested water stirred up.

Hard water generally consists of two kinds; those in which temporary hardness, and fixed or permanent hardness may be found. Sometimes, however, both conditions are met with in the same liquid. The first is that where a fur or deposit occurs when water is boiled, the salts in this case being precipitated or removed. The second kind does not fall when boiling is adopted, and so may prove troublesome for many purposes.

Temporary hardness is due mostly to the presence of chalk, i.e., carbonate of lime or calcium. This constitutes the fur or crust over the lining of boilers. Permanent hardness is caused principally by sulphate of lime, chloride of lime, and magnesium salts.

The relative amount of these impurities may be ascertained by slowly evaporating a glassful of the water, leaving it in a warm room for a few days or weeks. All the salts, etc., contained in it will remain behind after the water has vanished; and this residue can then be measured and compared with the total bulk of the water. If this sediment is treated with a few drops of hydrochloric acid (spirit of salt) any chalk or carbonate of lime present will be revealed by briskly effervescing.

For testing hard water, a little pure white soap is useful. This should be dissolved in alcohol (spirit of wine) and then be added to a glassful of the water. If any hardness exists it will be disclosed by the sudden milkiness which follows, and according to the amount of the mineral salts acted on will depend the intensity of the opaque whiteness. Soft water will exhibit no change during the soap test.

An oleate is formed by the reaction of lime, magnesia, etc., salts and soap, in hard water. Magnesia is disclosed as a dense white precipitate or deposit where carbonate of ammonia, and phosphate of soda, are together dropped into some of the water while boiling.

When lime water (i.e. milk of lime) is added to water containing carbonic acid gas (i.e. carbon-dioxide) a precipitate occurs; its scantiness or abundance denoting the corresponding quantitly of the gas. Carbonate of lime (chalk) is produced by this method.

A milkiness is obtained when a few crystals of oxalic acid are dissolved in water containing soluble lime, the acid combining with the salt to make insoluble oxalate of lime.

Sulphur can be detected by means of mercury, a globule of which should be corked up in a tube of the suspected water, the whole then being allowed to remain undisturbed for some time—the longer the better. The sulphur present will unite with the mercury to compose a sulphide of the metal, which will have a dark appearance. Upon shaking it up, the mercury will assume a silvery grey aspect, instead of the usual glistening one.

Iron may be tested for by pouring a few drops of nut gall tincture into the water. (This substance contains gallic acid which in combination with iron salts forms

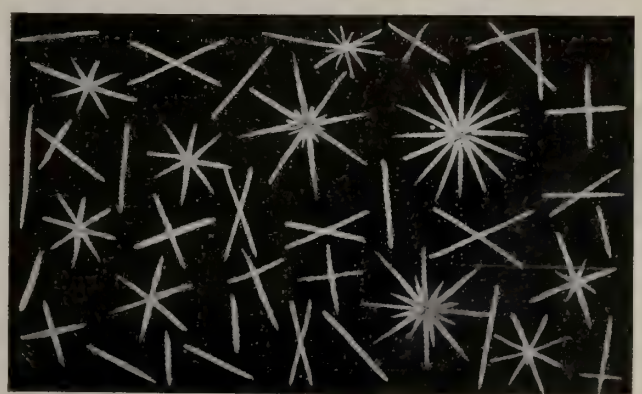


Figure 2.

some commercial inks). The iron in the water will cause it to become dark grey, or deep black, the intensity of the hue varying with the amount of the metal present.

The test for free sulphuric acid, or any of the sulphates which I have illustrated, constitutes a very remarkable series of modifications, and has been detail-

ed because the reader is quite familiar with the substances used. Sulphate of barium, for instance, is the loader known as permanent white, or blanc-fixe.

If a water has any sulphuric acid in it, even though only mere traces are present, or is tainted with a soluble sulphate, such as sulphate of magnesia, these chemicals can be readily discovered by adding a small quantity of barium chloride to the water. Streamers of milky precipitate of barium sulphate will occur This salt is quite insoluble in water and in nitric acid. All the acid can be removed by dropping in additional

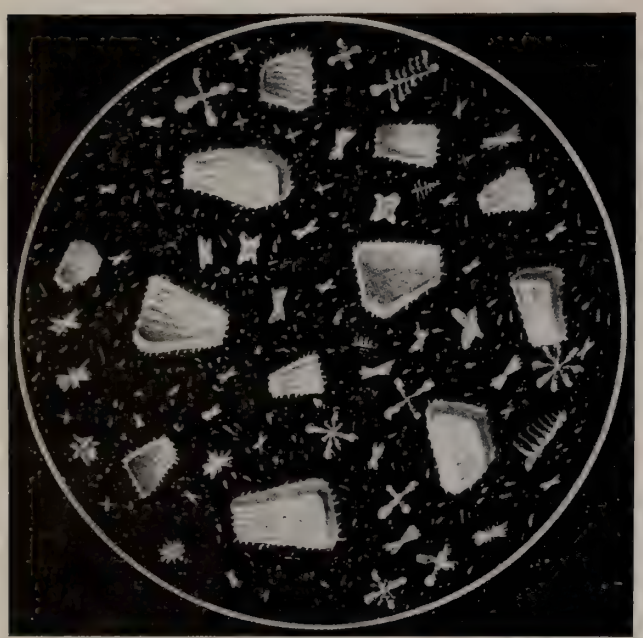


Figure 3.

crystals of the barium chloride. Of course, if no sulphuric acid is present, either in a free state or combined with a base to form a salt, no precipitate will appear when barium chloride is dropped in.

The procedure of the reaction is as follows: Barium chloride is a glassy-looking, flaky salt, which can be made to crystallize into four-sided plates. The commercial granules are of many shapes. I place one of these tiny pieces on a glass slide; and then let fall upon it some water which has been faintly impregnated with sulphuric acid. Instantly there is visible a milkiness, which, upon magnification, is found to be due to the sudden creation of multitudes of specks of the kind shown in Fig. 1. These range from almost invisible round ones to needle-shaped specimens, which cross one another as minute stars, rosettes, etc. When, therefore the cloudy or milky precipitate is seen by the naked eye in a glass of this water, the turbidity consists mostly of floating and gyrating rosettes, and other figures, composed of barium sulphate. A selection of the crystals so strangely and instantaneously formed is given in Fig. 2 on a larger scale; the diameter—top to bottom—of the black ground corresponding with the width of an average paper fibre.

When the barium chloride is added to the sulphuric-acid-contaminated water, the chlorine gas of the chloride is driven out, and the acid combines with the barium, thereby making sulphate of barium instead.

Compare these crystals of barium sulphate with the normal commercial powder, which is illustrated in Fig. 3. The latter consists of wedge-shaped granules; and though small, are huge when viewed side by side with the result of the test.

I have said that the barium sulphate precipitated is not soluble in nitric acid. I added a drop of this acid to the water containing the newly-made precipitate of barium sulphate, Fig. 1, after the large chloride crystals had dissolved away; and there were instantly formed hosts of cubical and kindred crystals of the kind shown in Fig. 4, these presumably constituting insoluble barium nitrate. Similar objects can be obtained by adding dilute nitric acid to barium chloride when no sulphuric acid or sulphate is present. It is very curious to see the rosettes and needles of Fig. 1 rapidly rearrange themselves into the designs of Fig. 4. By the way, all these objects are movable, and can be made to tumble about in the drop of water by tilting the microscope, and therefore the slide they are on.

It may be advisable to point out that a precipitate is not always necessarily a noticeable bottom sediment. It may remain suspended throughout the whole body of the water in the form of microscopic specks, which give the liquid an opacity or turbididty. Sometimes a precipitate will curl upwards gracefully as cloudy currents from the bottom of a vessel of water, and then rapidly subside, leaving the medium clear. At other periods the precipitate will float on top of the water.

Almost any ground or tap water will leave white films or smudges if a few drops of it are spread over a sheet of glass and allowed to dry off. These white deposits represent the various salts. Some of them are very curious when magnified. In Fig. 3, for instance, are shown the details obtained in this way by evaporating a small quantity of moderately hard water. Very minute crystals occurred, and these are shown between the dozen large granules of barium sulphate.

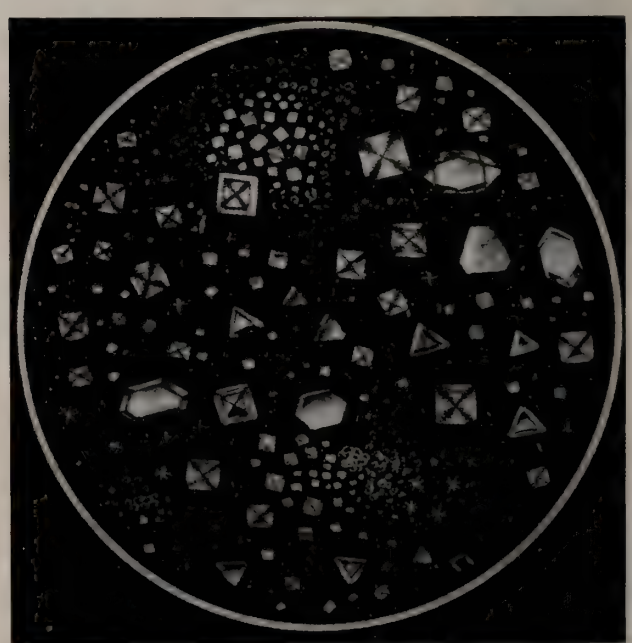


Figure 4.

The purest water is that obtained in districts where millstone grit and granite rocks abound. That which goes through chalk is excellent so far as freedom from organic matter is present, but it is liable to become very hard.—The Paper-Maker and British Paper Trade Journal.

COAL AND ITS WASTES

W. BOYD CAMPBELL, B.Sc.

Coal is so largely used for all steam raising purposes that it has almost become the universal fuel in this country, yet it is by no means a satisfactory one, both by reason of its own inherent peculiarities, and because there is so much dirt palmed off as coal. Concerning the first of these drawbacks, we are almost helpless. Until we can find something cheaper and better to burn, or some benevolent scientist finds means of using the energy of the sun, direct, we must go on wasting almost ninety per cent. of our coal to use the other ten. But we can make the best of our present knowledge and squeeze just a little more work out of what we have; and we can prevent ourselves being imposed upon by the dealers who would sell us dirt in place of fuel.

The buying of coal is, in too many cases, left entirely to an economical purchasing agent who is very liable to base his ideas of economy solely on price. This is generally where the trouble comes in and unfortunately may exist for an indefinite period without notice, but it affects the profit and loss account none the less for that. To the purchasing agent generally, coal is just coal—or possibly he may distinguish two kinds of coal —good coal and bad coal. Calorific values and B.T.U.'s are Greek to him. That is only natural; his thoughts are in dollars and cents, and until any such terms can mean anything to him, they must be translated into his language. A suggestion along this line is the principal purpose of this article.

Coal, says the book, is a mineral made up of volatile hydrocarbons, fixed carbon, and a variable amount of ash. These constituents are in various proportions in different coals, and it is their variations that the buyer must observe when purchasing his fuel. The actual value of the coal is bound up entirely in the fixed carbon and the hydrocarbons. The ash is dead weight which must be paid for, and handled, and carted away again, for no purpose at all. It needs no great power of reasoning to show that the amount of this ash is going to be very important. A coal of 10% ash selling at $4.00 will be worth about the same as one with 15% ash at $3.78, or one with 5% ash at $4.25. That is supposing the combustible part to have the same heating value in each case. This would be approximately true if all the coals were from the same district. The value of the combustible part depends on the ration of the volatile matter to the fixed carbon, so that if we determine these we are in a fair way to know the real value of our coal. One thing more remains—all coal carries in its composition a certain amount of moisture. This does not mean the water that may get on it during transportation, though that counts up too. But, in the composition of the coal itself, there is usually from two to five per cent. of moisture, sometimes more. To put it another way—if coal is $4.00 a ton, then from 8 to 20 cents a ton is paid for water, which is worse than useless. Having found the moisture content, volatile combustible matter, fixed carbon and ash, it remains to put these in a shape where they can be used to compare prices. The formula may be expressed in a curve, thus: (See curve).

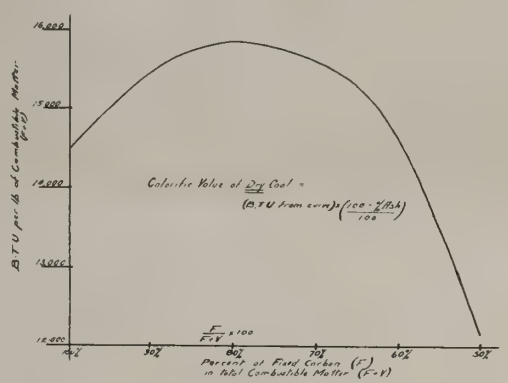
This gives the number of heat units, (B.T.U., or British Thermal Units) in one pound of combustible matter. From this, the number of heat units in a pound of coal can be found as follows:

$$\text{Heat units in 1 lb. coal} = \frac{(\text{B.T.U. from curve}) \times (100 - \%\text{ash} - \%\text{moisture})}{100}$$

These heat units are usually expressed, as above, as B.T.U. or British Thermal Units. One B.T.U. is the amount of heat required to raise the temperature of 1 pound of water by 1°F.

Another, and better way of arriving at the heat value of a coal, is by means of a bomb calorimeter. The laboratory of any plant which uses coal in quantities, should be equipped with a good calorimeter. For, although fairly good results can be obtained by use of the curve and formula given, still, the only really dependable test is the calorimeter. In this the coal is actually burned, and the heat given off is accurately measured. This is the final test of the coal, as far as boiler purposes are concerned.

Now if you know the calorific values of your coals, and their prices, it is a simple trick to find the price of each heat unit; and this is the real measure of the cheapness of the coal, since it is heat that you are



buying, and not simply matter. Having found the heat value of the sample, you should insert this in your coal contract, making it call for coal of a heat value equal to that of the sample, with a penalty of a definite reduction of price, proportionate to any deficiency. Then test the coal when it comes. It is only in this way that the buyer can protect himself.

Having got the most economical coal, it is up to the buyer to use it to the best efficiency. The matter is in the hands of the fireman. A good fireman is a jewel of great price. He is ultimately the arbiter of the coal question. A poor fireman can send double his wages up the stack every day and never know it. And at that he will work harder than the good one. Coal may either burn to produce Carbon Monoxide or Carbon Dioxide. If it is burned to Carbon Monoxide it produces less than one-third the heat that it would if burned to Dioxide. Now Carbon Monoxide is quite colorless and the fireman can't see it going out the stack, so he keeps on shovelling coal, instead of giving his fire more air. On the other hand, coal uses about 11 or 12 pounds of air per pound of coal. All this air has to be heated to the temperature of the flue gas and the heat so used goes up the stack. So a little more or less air is going to make a big difference. Now, either too much air, or too little, is going to reduce the amount of Carbon Dioxide or CO_2 in the flue gas; the former by diluting

the CO_2 produced, and the latter by partially preventing its formation, by forcing the formation of Monoxide instead. Now to aid the fireman in controlling this, CO_2 recorders have been put on the market. These record the percentage of CO_2 in the flue gas every five minutes, and furnish a guide and a check to the fireman, from which there is no getting away.

It can be shown that, with most coals, the percentage of CO_2 in the flue gas is about 15 under nearly ideal conditions. This is assuming that all the coal is burned to CO_2 without any excess of air. Owing to the temperature of the flue gas, there is a good deal of waste, even under these conditions. But if, with the same coal, enough extra air is admitted to cause the percentage to be 10%, then much more hot air is going up the stack, and the dearly bought B.T.U.'s are getting away without doing any work. The losses are about as follows:

% CO_2	Heat loss in stack Flue gas at 300°F.	Money loss per ton of coal at $4.
15.....	10.5%	$0.42
13.....	12.1%	0.48
10.....	15.8%	0.63
7.....	22.5%	0.90
5.....	32.0%	1.28

And most plants average pretty close to 7%, in blissful ignorance of what might have been and might still be if they would install a reliable CO_2 recorder.

Much more might be said about coal, were this article intended for chemists or engineers, when technical details would be in order. But the foregoing remarks are only meant as a hint for those who are interested in cutting costs. To most of these a word is sufficient.

AS SEEN BY WALL STREET.

In a review of the year, the Wall Street Journal says that 1912, in the main, has been a year of small profits to paper manufacturers. Of course, individual paper corporations have reported satisfactory business. The International Paper Co. had a good year and will show the largest gross and net earnings in any year since 1905. On the other hand, Union Bag & Paper Co. experienced unprofitable business and in the course of the year had to pass the dividend on its preferred stock. This action was caused by the extremely low price prevailing for paper bags. The American Writing Paper Co. had a fair year and the outlook for its product regarded as favorable. The United Boxboard & Paper Co. did not have a profitable year, being involved in considerable litigation.

Many of the paper manufacturing corporations, producers of high grade bond and book paper will show good results. There has been no boom at any time in 1912, business continuing at a steady rate. Demands have been large and as a rule there has been no trouble about supply.

It is the concensus of manufacturers that prices have been unsatisfactory, which is especially true of the news printing industry. While prices have been maintained by some manufacturers, there is no disposition towards an upward tendency. It is the statement of the industry that in all standard grades of paper early steps should be taken for readjustment of prices. Manufacturers assert that the prices have been practically stationary for the past ten years, while cost of materials and labor have increased considerably.—The Paper Dealer.

BATHURST LUMBER CO., LTD.

This company now controls all limits which can be worked from Bathurst Harbor. It was organized a few years ago of Buffalo capital, associated with Senator Edwards and other Canadians, taking over the limits of the Sumner Co., Limited. A little later, the Springfield, Mass., interests of Fred S. Morse, associated with the O. Sherman Lumber Company, bought out the plant and limits of Adams Burns, Limited, and erected a large new mill. By mismanagement and a legal error in attaching a very large mortgage on some property they bought to their entire holdings, they were forced into liquidation and their property sold, under mortgage. These purchasers sold to the Bathurst Lumber Co., who now hold 1,000 square miles immediately tributary to Bathurst Harbor, as well as 1,600 miles in the Gaspe Peninsula, 30 miles distant, which can be brought to a mill in Bathurst as well.

All New Brunswick limits leases run out in 1918 and just now the company are making representations to the local Government to have their licenses extended for a period of years. If this is successful they will immediately erect large paper and pulp mills in Bathurst. To this end they have secured from the Nepisiguit Real Estate and Fishing Co. for a large sum all water power rights on the Nepisiguit River, including Big Falls, 5,000 to 10,000 horse-power, and two smaller powers of 1,000 horse-power each, just below the first. These will be developed and brought into the mine, on tidewater at Bathurst. Mr. Angus McLean is the general manager and Mr. George Gilbert, Bathurst, the solicitor.

The site is a most excellent one, with deep sea shipping facilities, alongside the mill and the Government rapidly improving Bathurst Harbor. With this and the prospect of Drummond's shipping ore from the same port, it is proposed to have one of the finest harbors on the coast.

The I. C. R. and C. G. S. A. also afford excellent rail facilities.

THE PAPER CUP INDUSTRY.

There are now about thirty states that have prohibited the public cup and others who have bills pending that will either abolish or regulate its use. To meet this condition there has come the small paper cup, but so new is the business that patents have not yet been awarded on the machines that are required in their process.

The process is mechanical, the machines are driven by electrical motors, and from the time the sheet of paper enters at one side until it is delivered to the user through one of the vending cases, it is never touched by hand.

In this transition from plain to drinking receptacle the cup goes through a cutter, a stamping machine which shapes it, a paraffin bath which makes it sterile and at the same time fixes its shapes, and finally passes through a wrapping machine which counts off quantities of from 10 to 100 and packs them in cartons for delivery to the consumer.

Hundreds of people have been given employment by this new industry, and at the present time to supply the greatly increased summer demand factories are running from 7 in the morning until nearly midnight. The cup-making machines are tended by young women, are driven by electric motors of two-horse power each, and in some cases the paraffin is melted by electric heaters and sprayed by an electric blower.

CONTINENTAL BAG CO.

Continental Bag Co., Ltd., of Ottawa, has opened a large warehouse and sales office in Toronto at 20 Front street east, with Mr. Edward Crippin in charge as sales manager for Ontario.

Mr. Crippin joins the Continental after twenty years' experience in Canada and the United States, and has a



EDW. A. CRIPPIN

wide connection with the trade from Winnipeg to Montreal.

They will handle foreign as well as Canadian goods and paper as well as bags. The new Kraft bags, now being turned out are attracting marked attention in the trade and proving a very fine selling line. For a young firm, their progress has been striking and substantial.

INCREASE BOXBOARD PRICES.

In certain United States trade circles it is the belief that board prices will be advanced the first of the month.

"I do not see how it can be avoided if we are to make a fair living," said a board manufacturer. "Our supplies of raw material are not sufficient to meet mill demands, and the price has advanced from $3 to $5. The paper stock people are reaping a harvest at our expense. They claim a shortage in their usual supplies, and they may be right. Certain it is that the farmer is feeding his straw in preference to selling to the board mills at prevailing prices, and we cannot make strawboard at a profit when we have to pay $8 to $9 per ton for the straw."

Locally board product is selling around $29.

New York manufacturers have advanced prices generally, New Board being quoted at $33 to $34 a ton; Straw Chip, $32 to $33; Manila, $35.50 to $42.50; and Coated, $47.50 to $55.00.

HELIN'S MATERIAL.

Three Rivers, P.Q., Feb. 1, 1913.

Editor Pulp and Paper Magazine—

In your issue of December, 1912, page 377, you have an article comparing basalt-lava beater rolls and cast iron beater rolls of Helin's and Sodervall's patent—said article referring to some data published in your September issue.

The purpose of this letter is not to depreciate the value of the lava rolls, which I have been using for several years, but to explain what the cast iron roll of my patent is, and why it is superior to rolls of other kinds.

The special feature of Helin beater rolls are that the beating devices, or bars, are made of cast iron which by a patented process are made porous and very hard on such part of the bar that is subject to wearing —the side of the bar next to the body of the roll being ordinary cast iron.

The beating bars can be made to any pattern and may, in consequence, be fixed to any beater roll or jordan engine. The efficiency of a Helin roll is the same as that of a stone roll; but surpasses it in strength, as the beating bars are made of a tougher material. The resistance to wearing is very great, owing to the special properties of the material, and no discoloration of pulp takes place. The figures for power consumption given in your September issue refer to Kraft Paper, and are maximum power consumed during the beating process (not average figures from start to finish.) Cast iron rolls are now used for the making of news, greaseproof, kraft and machine glazed papers, and have been on the market for about two years. More than one hundred are at present in use. Many paper makers have changed their entire beater equipment, putting in cast iron rolls in preference to rolls previously in use, thereby almost doubling the capacity of beaters before fitted with steel knives.

When, as mentioned before, the cast iron bars may be fitted to existing rolls, instead of the knives before in use, such a change may be made at merely a nominal cost.

Yours truly,

H. HELIN.

INCINERATOR LININGS.

It has been pointed out by the Swenson Evaporator Co. that the question of lining incinerators for pulp mills is one of some little complexity because of the various features which have to be taken account of. The lining has to withstand not only the high temperature and the wear and abrasion due to the revolving kiln, but also must be of exceptional density so that it will not be affected by the liquor going through the kiln.

In a recent machine furnished for this purpose for which a special fire clay block was designed the highest grade of clays were used in order to render the block unusually refractory. Although a lower grade of clay could withstand the heat of the incinerator without melting on the surface, it has been found that the life of the lining is very much increased by the use of the highest grade clays obtainable. These have to be carefully selected, and ground and burned with the greatest care.

Howard Smith, president of the Howard Smith Paper Mills, Ltd., Montreal, Canada, spent the last week in New York.

OTTAWA TRADE LETTER

(Special Correspondence of Pulp and Paper Magazine.)

Ottawa, February 10th, 1913.

The Bishopric Wallboard Co., the new firm which has been building a plant here, has now begun operations and are turning out their wallboard at a rate of about 50,000 square feet per day. The factory is located at Hillcrest, about a mile from Billings' Bridge and is served by both the C.P.R. and C.N.R. It is of fireproof construction and constructed along modern lines.

The wallboard which the company will turn out is a material used instead of lath and plaster, and is put up in crates containing sixteen sheets each, each sheet being four feet square and three-eights of an inch thick and selling for $6.40.

The company is composed of the following: President, George L. Barrett; general manager, George F. Bishopric; secretary-treasurer, F. J. Balch. Orders have already been received for a large proportion of the company's output.

That the value of Canadian pulpwood lands would largely increase as a result is the view taken by local men interested in the industry of the proposal of the Democrats to reduce the wood pulp and print paper schedule of the United States tariff. "It will make a big difference to the Canadian trade," said Mr. C. J. Booth, of the lumber firm of that name, when seen, and this statement was endorsed by others. If the present embargoes on the export of pulpwood cut from Crown lands were raised, say the local men, Ontario, Quebec and New Brunswick could compete with United States mills as regards supplying the American market. The Canadian provinces have the advantage of better water powers.

Shippers of pulpwood, pulp and paper are vitally interested in an application to be considered by the Railway Commission at its session in Ottawa on April 15th, when the application of Canadian shippers through the boards of trade of Toronto, Montreal and Winnipeg for a system of reciprocal demurrage, is dealt with. By reciprocal demurrage is meant a system by which the railway as well as the shipper will be fined for delay in delivery and unloading of cars. Last year, it will be remembered, the Railway Commission authorized an increase in demurrage rates on freight cars from a flat rate of $1 to $2 and $3 per day for each day beyond the free time allowed. This was done largely as an experiment and ceases to take effect in March. The shippers are determined to fight any such permanent increase unless the proviso is made that the railways, whose inadequate terminal facilities are blamed for delay, be liable to fine as well.

The returns from a number of consular districts of exports to the United States are available. The figures for the Ottawa district show an increase in exports of news print paper and a decrease in that of ground wood pulp. The total export of news print paper was $865,533.08, as compared with $653,162.67 the previous year. The total export of ground wood pulp in 1912 was $417,320.02, as compared with $542,836.52 in 1911. The export of spruce last year was greater than in 1911, the figures being $427,550.86 and $236,715.90 respectively.

The export of pulp wood from the Fredericton, N.B., consular district in 1912 was $114.50, as compared with practically none shipped the previous year.

Of great interest to pulpwood and paper men was the annual meeting of the Canadian Lumbermen's Association, which was held in Ottawa on February 4th. Among the pulpwood men who are members of the association are the Campbell-McLaurin Co., of Montreal; the Laurentide Co., Grand Mere; J. R. Booth; the Spanish River Co.; E. B. Eddy Co.; Price Brothers, and the Riordan Paper Co. Transportation and tariff questions took up most of the time of the convention during its business sessions, while on Tuesday evening a big banquet was held in the Chateau Laurier.

A slight conception of the loss the country suffers by fire was conveyed in the figures giving the total value of the losses for United States and Canada at $207,000,000 during 1912. The executive report contained a reference to the settlement of claims which was of general interest. "So far as the railways are concerned it is abundantly proven that they settle no claims unless they absolutely must," said the report. "They take unreasonable time to conduct their alleged investigations and positively refuse to add interest on the amount of the claim for any period of time whatever."

In the report of the transportation committee some further criticism of the railways and the railway commission was made over the recent demurrage order which went into effect on December 15th. The committee claimed that if it was fair for the Commission to penalize shippers and consignees the logical thing for the Commission to do was also to penalize the railways. The committee also referred warmly to the matter of claims against the railways. "It is no exaggeration to say that the railways undoubtedly have upwards of a million dollars of public money belonging to the shipping public which they have the use of continuously without paying one cent of interest for it," said the report. "So far as members of this association are concerned we should take steps to put a stop to this feature for the future."

A complaint from Mr. W. G. Hughson, vice-president, on the delay in delivery of cars on the railroads evoked a lively discussion and many striking cases of such delay were given.

A discussion in regard to the best method of measuring pulpwood was one of the features of the annual business meeting of the Canadian Forestry Association, held in Ottawa, last week, of principal interest to pulp and paper men. About forty members, representatives of the timber industry, the pulp and paper trade and conservation interests, attended the meeting, reports being presented, recommendations being passed and officers being elected.

Mr. Ellwood Wilson, during the course of a discussion on the best method of measuring timber, stated that in his opinion the only practical way to estimate pulpwood was by cubic measure.

Mr. J. B. White agreed with this statement, while Dr. B. E. Fernow, dean of the faculty of forestry in Toronto University, was of opinion that no definite rule should be laid down, but that the different provincial governments be asked to adopt a uniform standard.

A lively discussion arose over the continuance of publication of the Canadian Forestry Journal, the organ of the association, but, ultimately, on motion of Senator Bostock, seconded by Hon. Sydney Fisher, ex-Minister of Agriculture, it was decided to maintain the

paper. Figures given in regard to fire protection in Canada showed that various government and private concerns in the Dominion last year spent from $1,000,000 to $1,500,000 to this end, and that Ontario had over 1,000 rangers on hand during the danger season. In British Columbia a new and vigorous forest service was organized on July 1st; in Quebec the St. Maurice Valley Forest Protective Association successfully inaugurated the work of co-operative fire protection. The Canadian Pacific Railway, among other work, has installed oil-burning apparatus on all its locomotives from Field, B.C., to Kamloops, in order to prevent fires from sparks.

The directors again urged the need of a federal laboratory for the testing of the different varieties of Canadian woods which, it was hoped, would be secured in the present year. Much interest has been taken by local pulp and paper men in the discovery as a result of United States experiments in this line, that jack pine could be successfully utilized for pulp, and it is felt that Canada should not be behind in experimental work of this kind.

The reports as to membership and finances showed that both were in a healthy condition, the number of members being 2,865. The following officers were elected: President, Hon. W. A. Charlton; vice-president, W. A. Power; secretary, Mr. James Lawler, re-elected. On the board of directors Messrs. J. B. White (who took the place vacated by Carl Riordon). E. J. Zavitz, R. D. Prettie, H. R. McMillan and G. Cahoon were added to the list, which otherwise remained as before. The territorial vice-presidents elected were as follows: Ontario, Hon. W. H. Hearst; Quebec, Hon. Jules Allard; New Brunswick, Hon. J. K. Flemming; Nova Scotia, Hon. O. L. Daniel; Manitoba, Hon. R. P. Roblin; Prince Edward Island, Hon. J. A. Matheson; Saskatchewan, His Honor G. W. Brown; Alberta, Hon. A. L. Sifton; British Columbia, Hon. W. R. Ross; Yukon, Commissioner George Black; Mackenzie, F. D. Wilson; Keewatin, Hon. D. C. Cameron; Ungava, Mgr. Bruchesi.

A new use for paper will be submitted by a sanitary waterproof garbage bag of that material, the invention of Mr. R. K. Milks, of Ottawa. The new device is counted on to replace the permanent garbage can and to obviate the danger of a prolific breeding place for flies. It has been patented in Canada and patents have been applied for in other countries. It consists of a stand, on which a new bag is placed each day, the receptacle which is filled being carried off to the incinerator and burned with its contents. Thus the garbage can as a breeder of microbes will be replaced by a neat paper bag, easily collected and replaced, and free from disagreeable odor.

A decrease in Canada's exports of mechanical wood pulp to Great Britain is shown in the report of Canadian Trade Commissioner J. E. Ray, of Birmingham, England, to the Trade and Commerce Department. The export of this product for the year amounted to $375,945, a decrease of $432,225 in comprison with the previous one, while those from Newfoundland indicate an increase of $226,000, doubtless due to the increasing output of the Harmsworth mills. From 1907 increases of imports of mill board and wood pulp from Canada are recorded. Last year they amounted to $409,020, in comparison with $22,605 five years ago. Imports from the United States during the same period exhibit a slight decline.

The effective date of the increased rates on pulpwood from Ontario, Quebec and New Brunswick to New York points recently issued by the railways has been postponed until March by the Railway Commission. The tariffs were originally postponed until February, pending the issuing of an order by the Commission settling the question whether the increase, which was the subject of a hearing, should be allowed, but the order is not ready yet and therefore the further postponement.

It may be stated in passing, that Ottawa pulpwood men are by no means averse to having the increased rates allowed. None of Ottawa firms were represented at the hearing of the protest of pulpwood shippers against the new rates and it was openly stated by the latter that the local men must have had something to do with the railways' proposed advance. While they deny this a number of those interview by your correspondent admitted that they would not care if the increased rates were allowed. For one thing it will help to eliminate American competition which, since the large buying up of extensive tracts of pulpwood in Quebec by United States' firms, has become felt.

What Ottawa paper firms are kicking about, however, are the rates on paper to American points. The rate from Ottawa to Chicago, for instance, is just as high as that from points on the other side of the line a much greater distance from the Windy City.

The South American markets are the latest being sought by the Canadian shipper of pulp and paper. Your correspondent was assured by a member of a big local exporting firm that it, together with a number of other mills, had been turning its eyes towards this new source of demand and that the matter had been represented to Hon. George E. Foster, Minister of Trade and Commerce, with a view to obtaining better shipping facilities. The trouble at present is not only that the rates via steamship lines to South America from New York are high, but that it is impossible to make contracts with them for more than a year and, consequently, shippers under these conditions do not care to expend much effort in developing a trade. Could Canada obtain a direct service, however, valuable new markets would be opened up with the Argentine Republic, Venezuela and Brazil. "The Americans are already in the South American market, but could we get the proper facilities we could compete with them," said your correspondent's informant. "We have represented the matter to Hon. Mr. Foster and hope for some arrangement."

The Australian markets, already well supplied with Canadian paper, also promise to furnish an even better demand if preference is given to the British Empire. The International Paper Company of the United States at present does a large business there, but could scarcely continue it at advantage if proposed trade agreements between Canada and Australia reach fruition.

The changes which are being made to the plant of the E. B. Eddy Company, with a view to supplying increased power facilities, will not be completed till early summer, according to a statement made by Manager Millen last week.

The markets for all lines in Ottawa at present are steady and, for the time of year, active, although prices have not changed to any great degree. News, rolls, is being quoted at $42 to $45 and in sheets at from $45 to $50, according to the size of the order. Ground wood at the mill goes at from $15 to $16; sulphite, unbleached, $45 to $47 delivered in Canada, and $47 to $49 delivered in the United States; sulphite, bleached, $60 in Canada, and about $62 for United States delivery.

"MAC."

TORONTO PAPER HOUSE PROGRESSES.

The firm of Douglas & Ratcliff will hereafter be known under the new name of The Ratcliff Paper Co., Ltd., of which Mr. Fred L. Ratcliff is president and major stockholder. His paper career has extended over twenty-six years, since he commenced, as office boy, with Taylor Bros., of Don Valley.

In 1899 the firm of Douglas & Ratcliff was organized, which, in 1902 absorbed the Beaver Paper Co. This, in 1903, became the firm of Douglas & Ratcliff, Ltd. The senior member retired in 1910 after disposing of his interest to the latter, who now incorporates under his own name.



FRED. L. RATCLIFF

A branch was started in Winnipeg in 1906 which, in 1909 became Douglas, Ratcliff & Hudson, and in 1910 the Hudson Paper Co., at which time the Toronto people disposed of their interests to the junior partner, Mr. Hudson.

This new firm with head office in Toronto covers the Ontario field for a number of our best mills in News, Manila, Wrapping and Kraft. Nearly all their grades are handled as jobbers rather than agents, except in news, for which they comfine themselves to the Belgo-Canadian product. This sheet has grown rapidly in favor, due, mainly to the indefatigable efforts of the engineer, Mr. Statler, who is getting the old plant on a new and efficient productive basis.

The Ratcliff Paper Co. are to be congratulated on their rapid growth and the prominent place they hold in the Canadian paper trade.

WHO'S WHO IN AMERICA.

The 1912 edition has just reached our office and is as valuable as ever. Numerous paper and pulp men are mentioned, together with their biographies. It is a book, invaluable in the office and counting room as a directory and for all departments in connection with the sales or publicity of manufacturing houses. The book is most comprehensive and covers its field in an admirable manner and should be of timely interest to paper men. Price, $5.00.—A. N. Marquis & Co., 440 Dearborn Street South, Chicago.

ALBERTA-SASKATCHEWAN PAPER & STRAW PRODUCTS CO., LIMITED.

As previously announced in our columns, the above company has been formed with temporary head office at 217 Judge Travis Building, Calgary, Alta. Mr. Chas. F. Schaub, the president and general manager, is a man of wide and varied experience in the manufacture of straw papers, chiefly in the Southern States. The firm will manufacture building paper, tar paper, corrugated paper, box card, folding boxes, egg crate fillers and bags, and hope to supplant the imported product throughout the Western market. Last year Canada imported from the United States straw paper and straw products to the value of $4,000,000, at the same time destroying our own enormous supply of straw, chiefly throughout the Western Provinces.

The initial plant is to be built at Medicine Hat, immediately, at a cost of $250,000, and will use daily fifty tons of wheat, rye, oat and flax straw, with an output of forty tons of straw board products per day. The plant will employ about sixty men.

The corporation of Medicine Hat have granted five acres of land and leased four and a half acres adjoining for the nominal fee of $1.00 per acre with option to purchase at $2,000 per acre, together with free gas for five years. Added to this, free trackage, free water, numerous other advantages, estimated as assets with $200,000. They propose to obtain at least 50 per cent. of the supply in the immediate vicinity of Medicine Hat by the use of motor trucks.

Original plans called for similar mills at Red Deer, Calgary and Moose Jaw, but later developments have altered these to a plan of concentration and later extension at Medicine Hat.

The capital stock is $300,000, divided into three hundred thousand shares at $1.00 each, fully paid and non-assessable. It is being offered to the public through the West by Mr. F. A. Burton, one of the directors of the company.

We predict for this enterprise the finest returns.

COLONEL CHARLES H. JONES.

The death of Col. Jones, president of the Lockwood Trade Journal Co., New York, has been felt throughout the entire pulp and paper industry, especially in the United States.

He was a man who guided for many years the policies of his publications, and gave to them his personality and genius as an organizer and literary man. Always a forcible writer, a witty and fluent speaker, he made a combination very rare.

For the past years his life has been spent in France, but even from that distance he has maintained a close direction of his publications. The work he started will continue to go on and play an important part in the sphere which he had developed for it.

AMERICAN BIBLE PAPER.

The Bostonian Bible paper is considered an achievement, being suited to many uses. It has printing qualities, finish opacity and strength equal to many of the imported papers. It is being carried in 25x38, 22, and is obtainable in any desired size.

CANADIAN FORESTRY ASSOCIATION

The fourteenth annual business meeting of the Canadian Forestry Association was held in the Board of Trade rooms at Ottawa on Wednesday, the 5th inst. While, of course, the attendance was in no way comparable with that at the convention of this important body, several men of prominence in the political and industrial life of the country were present, and much interest was manifested.

Minutes of the previous annual meeting were read, which showed that progress in forest conservation had been steady in Canada during the year. The work of the Dominion and the large forest provinces has gone on developing for the most part without any sudden changes.

The Dominion Forestry Branch in addition to its protective, tree-planting and investigating work, made an examination for the purpose of ascertaining whether certain areas in the Railway Belt in British Columbia, and others south of Lesser Slave Lake in Alberta, in northern Saskatchewan and in southeastern Manitoba should be put into forest reserves.

In British Columbia the new Forest Act, which has been in preparation (including the work of the forest commission) for some years, went into force on July 1st, and the organization of the forest service under the same resulted in the employment of a number of forest engineers, and a largely increased force of rangers.

Ontario had over one thousand rangers in the field during the danger season. Altogether it would appear that federal and provincial government expenditure on forest protection amounted to between one million and a million and a half dollars.

Private efforts in regard to forest protection were on a larger scale than ever before. The Canadian Pacific Railway transformed all its locomotives between Field and Vancouver from coal burners to oil burners, and besides a great deal of investigating, nursery and planting work toward the close of the year, offered prizes aggregating $2,400 to farmers for the best plantations in 1914. A number of timber limit holders, particularly in Quebec, have erected telephone lines and cut trails to protect their holdings.

In addition to these improvements the season, being exceedingly wet, was an excellent one for forest protection, so that there were few serious fires.

One of the things for which the Association has pressed, a federal laboratory where the different woods of Canada might be thoroughly tested and studies made in preservation and collection has not yet been secured, but it was hoped that this would be the case before the lapse of another year.

Forestry was beginning to be recognized as a profession, and a body of trained foresters, graduates of forest schools, is now to be found in Canada. There is still need for training the rank and file of the forest protective army, the forest rangers, for their duties. Ranger schools have proved very useful in other countries in increasing the efficiency of the men and in showing them how to work to best advantage.

The secretary in his report gave a general review of the work of the Association during the year. Membership continues to increase, being now 2,865.

The chief discussion hinged upon the question whether to discontinue publication of the organ of the Association, the Canadian Forestry Journal, Mr. Thomas Southworth, having given notice of a resolution to abolish that and to devote the money thereby saved to the more extensive issue of bulletins, etc., among the newspapers.

Several letters were read from directors and others interested, which indicated that the feeling against such a step was quite strong, as it would remove a strong bond of unity among members. Finally, on the motion of Senator Bostock, seconded by Hon. Sydney Fisher, it was decided to continue both the journal and newspaper publicity. During the discussion the future of the Association was a subject vigorously handled, as well as its relations with the Forest Branch, from which it has received valuable help and co-operation.

Other subjects debated were, "Uniform Log Rule" and "Fire Protection," Messrs. G. Y. Chown, Ellwood Wilson, Dr. Fernow and Hon. Sydney Fisher being among those taking part.

A resolution was passed authorizing the Association to grant $25 to each of the two committees having charge of the erection of monuments in memory of Prof. Guyer, the father of forestry in Germany, and M. Brouillard, the famous French sylviculturist.

A committee was appointed to extend the membership of the Association and form local associations in cities, towns and counties throughout Canada.

The elections of officers resulted in the election of Hon. W. A. Charlton as the new president, and Mr W. Power as vice-president. On the board of directors, after some discussion, Messrs. J. B. White (who took the place vacated by Carl Riordon), E. J. Zavitz, R. D. Prettie, H. R. MacMillan, and G. Cahoon, Jr., were added to the list, which otherwise remained as before. The secretary, Mr. James Lawler, was re-elected. H. R. H. the Governor-General was elected patron; Rt. Hon. R. L. Borden, hon. president; Rt. Hon. Sir Wilfrid Laurier, hon. past president.

At a later meeting the following territorial vice-presidents were appointed: Ontario, Hon. W. H. Hearst; Quebec, Hon. Jules Allard; New Brunswick, Hon. J. K. Flemming; Nova Scotia, Hon. O. L. Daniel; Manitoba, Hon. R. P. Roblin; Prince Edward Island, Hon. J. A. Matheson; Saskatchewan, His Honor G. W. Brown; Alberta, Hon. A. L. Sifton; British Columbia, Hon. W. R. Ross; Yukon, George Black, Commissioner; Mackenzie, F. D. Wilson; Keewatin, His Honor D. C. Cameron; Ungava, His Grace, Mgr. Bruchesi, Archbishop of Montreal.

The treasurer, Miss M. Robinson, Ottawa, was re-elected and thanked for her services during the past year. The assistant secretary was also thanked and awarded an honorarium of $50.

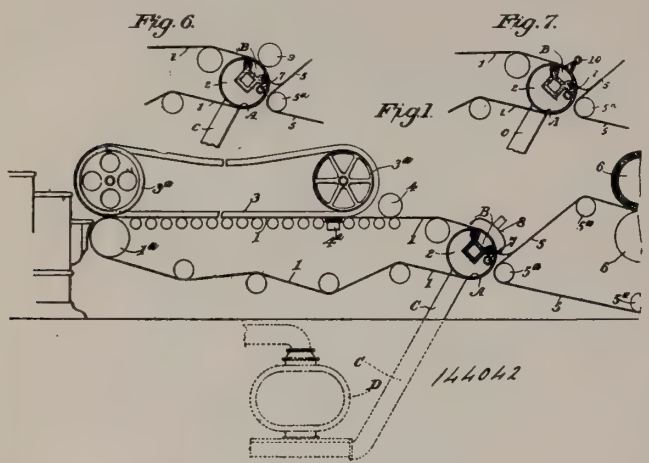
PAPER AND PULP ASSOCIATIONS MEET.

A large attendance is expected at the annual conventions of the American Paper and Pulp Association and the National Paper Trade Association, which will take place respectively on February 19th and 20th and February 17th, 18th and 19th. The banquet of the American Pulp and Paper Association will be at the Waldorf-Astoria, New York, on the evening of the 20th, and, judging from all present indications, will be a very great success. A feature of the banquet of the National Association will be a fine vaudeville programme. The Associated Dealers in Paper Mill Supplies will also have a banquet on the 19th inst. at the Hotel McAlpin, also accompanied with vaudeville, largely to take the place of the usual speeches.

RECENT CANADIAN PATENTS AFFECTING THE PULP AND PAPER INDUSTRY

MILLSPAUGH SUCTION ROLL.

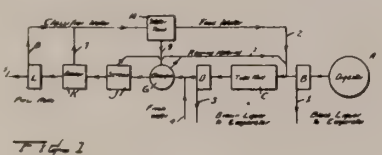
Canada Patent No. 144,042. Wm. H. Millspaugh, Sandusky, Ohio. In a paper making machine of the Fourdrinier type the combination with the making wire of a suction roll at the delivery end and driving the

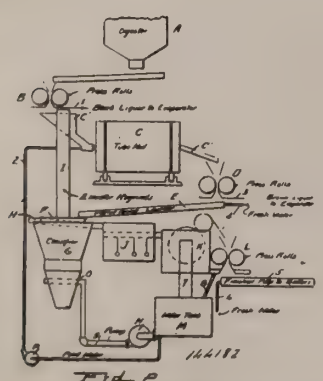


wire, the latter being free from pressure appliances for squeezing out water from the sheet. Deckel straps extending toward the suction roll, a dandy roll in advance of the suction roll, a single suction box under the rear deckel pulleys, and a positive rotary air pump connected with the suction roll and adapted to maintain such heavy uniform vacuum as to create a constant high pressure upon and draw large volumes of air uniformly through the sheet, whereby the wire is locked to the roll and the sheet is substantially freed from water as it passed from the wire. The patent includes a rotary vacuum pump capable of delivering large volumes of air through the sheet of paper.

CHEMICAL PULP.

Guy C. Howard, Everett, Washington, U.S. A process just patented, Canadian patent No. 144,182, for mak-





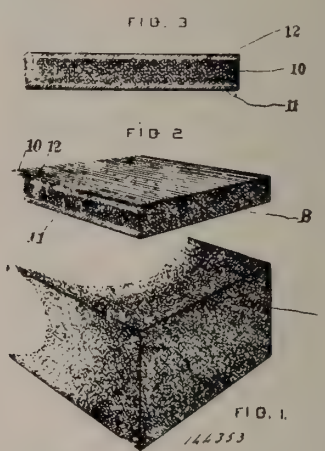
ing paper pulp, consisting in treating vegetable material to action of a chemical solution, draining the material, subjecting the material to mechanical grinding and washing within a mill containing pebbles and water, draining the material, classifying and washing the material, and finally draining the material as finished pulp.

The material is introduced into a circulating system of relatively large volume of water and finally drained. The fibre is classified according to size of fibre bundles and simultaneously washed with a large volume of water.

PULP BOARD

Canadian patent No. 144,353. George James Manson, Thorold, Ont., patentee.

A new article of manufacture, pressed and dried pulp stock having the fibres in the centre irregularly arranged and extending in practically all directions, and having the fibres on the surface regularly arranged.



The fibres in the centre irregularly arranged extending in practically all directions, and having the fibres on the surface regularly arranged and inclined in the same general direction to form a grain on the surface, and having a sand polished and sand papered surface. The surface fibres are all flattened in one direction.

QUESTIONS AND ANSWERS.

The Pulp and Paper Magazine will open a department of Questions and Answers for all interested in pulp and paper whether subscribers or not. All are invited to forward their questions which will be published and answered, either by the editor, or our readers will be asked to send in answers, all of which will be published.

The many difficulties which arise are often those which others have met and solved before. We are sure our readers will be glad to assist one another and make this new department a source of information and assistance to all. It will be opened on the receipt of the first few questions.

The Memphis Commercial has contracted for 1913 for six thousand tons of print, which is an increase of one thousand tons. The Star-Chronicle, St. Louis, contracts for 1913 for four thousand tons of print, which is an increase of 500 tons.

PULP AND PAPER NEWS

The second Walmsley paper machine started this week at Price Bros. Kenogami Paper Mills.

* * * *

Mr. W. G. Stewart, purchasing agent of the Spanish River Pulp and Paper Mills, Ltd., was married recently.

* * * *

The Fred W. Hall's Paper Company, of Toronto, has just been granted a charter and will carry on a general paper business.

* * * *

The St. Maurice Lumber Co., Gaspe, Que., has purchased the Gaspe Lumber and Trading Co. A large sulphite mill will be built.

* * * *

Mr. Allan Brown, formerly of the Victoria Paper & Twine Co., has joined the Continental Bag Company, Toronto office, as city salesman.

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The fourth mill of the Lake Superior Paper Company has started operations, bringing the total capacity of the mills up to 60,000 tons per annum.

* * * *

Mr. Ira Hill, sulphite superintendent for Price Bros. & Co., Limited, Kenogami, Que., is seriously ill and, according to last reports, his recovery is doubtful.

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The capacity of the plant of the Powell River Pulp and Paper Co., in British Columbia, is to be increased from 100 tons of paper per day to 249 tons, immediately.

* * * *

Frank A. Spear, master millwright and mechanic, formerly with Price Bros. at Kenogami, has joined the Spanish River Pulp & Paper Mills, Ltd., at Espanola.

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Jos. G. Mayo, traffic manager for the Spanish River Pulp and Paper Mills, Ltd., has been appointed manager of pulp sales and traffic for the Ocean Falls Co., Ltd., Vancouver, B.C. He left Espanola on Feb. 1 for the West.

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Chas. A. Morrison, master mechanic and millwright Price Bros. & Co., Limited, Kenogami, Que., has recently left that firm and will possibly join the Donaconna Paper Co., Quebec.

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Finch, Pruyn & Co., Inc., Glen's Falls, N.Y., propose building, during the coming season, a lumber and sulphite mill on the south shore of the St. Lawrence between Three Rivers and Quebec.

* * * *

It is unofficially reported that the Riordon Pulp and Paper Co., Montreal, Que., are erecting a $3,000,000 plant in Cobalt, Ont. They will also spend one and a half millions in a new plant at Merritton.

* * * *

Henry J. Eschelman, manager of the Colonial Wood Products. Niagara Falls, N.Y., announced recently that the company would build a large storehouse in connection with its plant at Thorold, Ont. A large addition to the plant is also in anticipation.

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The British Columbia Sulphite Fibre Co., Ltd., of Vancouver, B.C., pulp manufacturers, have applied for permission to lease lands on Redonda Island, due south of Elizabeth Island, near Pryce's Channel.

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The new office at Price Bros. & Co., Limited, has given signs of collapse, so the staff have been forced to seek temporary quarters elsewhere until the damage has been repaired. One of the water wheels in the ground wood mill is at present being completely overhauled.

* * * *

The Sherbrooke Machinery Co., Ltd., has circularized the trade this week, on their new built up Rock Maple Press Roll. This is a new and radical departure from the old style and promises to give excellent satisfaction.

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The Montreal Times, the new daily for that city, will appear for the first issue on Dominion Day. The office will be in St. Catherine Street, rather than in the downtown section. Mr. MacNab, as previously announced, is the editor.

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A serious accident occurred in the machine room of the Dryden Timber & Power Co. recently, by which S. M. Withrow will be incapacitated for an indefinite period. The unfortunate man was assisting bracing heavy timber.

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The well-known firm of felt manufacturers, the Hamilton and Ayers Co., Lachute Mills, Que., have altered their name to Ayers, Limited. The management and ownership remain as before and all the grades of felts are unchanged.

* * * *

President George Carruthers, of the Interlake Tissue Mills Co., Ltd., of Toronto, and Fred Duncan, secretary and treasurer of the St. Lawrence Paper Co., returned recently from Kalamazoo, Mich., after conferring with stockholders of the two companies living there.

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The Partington Pulp and Paper Co. is reported to have decided to erect a pulp mill at Marysville, N.B., early in 1913. Mr. George McKeen, of St. John, N.B., and others, have purchased for $60,000 the lumber mill and timber areas of Isaac C. Prescott, in Albert County, New Brunswick.

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Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que., will immediately add eighty tons to their capacity. Negotiations are already being carried on for the new equipment. It is rumored that the Recovery System will be supplied by Canadian Boving Co., 164 Bay street, Toronto.

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The Dominion Commission of Conservation is planning to introduce a system of forest guards along the right of way of the railways in New Brunswick. Such a system has been introduced in the west and a pronounced improvement in the protection of the forests from fires has resulted.

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Mr. Dan J. Albertson, the well-known paper mill engineer of Kalamazoo, Mich., spent this week with Mr. Billingham, his engineer in this district. They are erecting the enlargements of the St. Lawrence Paper

Mills at Thorold and Montrose Tissue Mill at Merritton. He has recently opened a Canadian office in Confederation Life Building, Toronto.

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The Federal Department of Forestry has announced its intention of opening a large forest tract for immigration; in the area is included a large percentage of pulp wood. Coincident to this plan is the reclamation of useless acreages that have been mistakenly devoted to agriculture. They will be used for reforestation. An appeal is being made for more men to enter the study of forestry. Dean Fernow states that the country has not one-half the men that it immediately needs.

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Th proposed Alberta, Peace River and Eastern Railway, which is to be built by a company of English financiers, of which Lord Farrer is the head, will open up large areas of pulp wood in the northern parts of Alberta and Saskatchewan, and immediately west of Hudson's Bay. The head office of the company behind this scheme is to be in Ottawa.

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The British tramp steamer McElwain, of Glasgow, Scotland, is at the dock of the Thames River Specialty Co., at Montville, Con., with a cargo of wood pulp from Port Clyde, N.S., consigned to that company. Much curiosity has been manifested among the inhabitants at the sight of a British steamer so far up the Thames River above New London, and it is thought to be the first to come so far up the river.

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It is rumored that the interests of the Northern Islands Pulp Co., Ltd., Port Arthur and Windsor, Ont., are negotiating with the council of the former city to establish a pulp and paper mill at cost of $750.000. This firm assigned on March 15th, 1912, Mr. E. R. C. Clarkson being the receiver. Chief creditors were the Detroit Sulphite Pulp and Paper Co., Imperial Bank of Canada, and others. Port Arthur interests hold a majority of the stock.

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The Lincoln Paper Mills Company, of Merritton, recently granted the annual bonus to the employees of the two mills, the Lincoln and Lybster Mills. The bonus was six per cent. on the wages for the year and amounted to a tidy sum. For the past twelve years the company has made this grant and in so doing has strengthened the feeling of good will between employers and employees. Nearly one hundred employees received th bonus.

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An increase of ten million dollars in the value of wood manufactures exported from the United States during 1912 is shown by official reports. Although there was a decrease for the year of 18.000,000 feet in timber exportations, the total of lumber and timber exported shows an increase of 6.10 per cent. Exportation of wood pulp increased 9,000.000 pounds over the previous year. A slight increase was shown in the exportation of ties, which totalled nearly 4.500,000.

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The contract which has been awarded to H. E. Talbot for constructing the dam and installing a hydro-electric system on the property of the Laurentide Company at Grand Mere, Que., involves an expenditure of over one and a half million dollars, and 1,000 men will be employed on the work. The new plant is to be completed in a little over a year, and the station will be one of the largest in North America, having a capacity of 50,000 to 75,000 horse power.

Experienced bushmen are applying to the Ontario Government in large numbers for the positions of fire rangers, and as a consequence very few students will be employed this summer. A new rule just put into force forbids the carrying of firearms by a ranger. This was made necessary by the frequent abuse of the privilege, and several near accidents due to careless handling. The fire rangers are vigorously protesting that the danger from wild animals is considerable and protection is absolutely necessary.

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The publishers of small city daily newspapers in Ontario and Quebec have taken up in earnest the fight against the so-called "dollar-daily." They have prepared a petition to the Postmaster-General setting forth the anomalous situation which now exists in this connection and suggesting an equitable method of removing this anomaly. Their petition is based upon the principle enunciated by the post office department itself that publications circulated at a nominal rate are not entitled to the second-class rate of postage

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Negotiations have been concluded for the sale of 116 square miles of spruce forest on the southwest coast of Labrador to a British syndicate by A. Lamont, Montreal. The price paid is reported to have been between two and three hundred thousand dollars, and the purchasers are expected to engage in the development of the newly acquired tract. Much good pulp wood is available in Labrador, but the extremely cold climate has discouraged all but one previous effort at exploitation.

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A steadily increasing percentage of the Miramichi lumber cut is shipped by rail, a great deal being cut in portable mills and loaded directly on cars for the United States market. At Doaktown, F. D. Swim will saw at least a million. Edward Deming, of Woodstock, who is operating back at Doaktown, is cutting two millions Tingley, of Chatham Junction, is sawing with a portable mill, back of Ludlow, one and a half million. The Andersons of Burnt Church are sawing at Porter Brook one and a half million. The company that operates the Gibson mill at Blackville will saw seven millions this year, all for the United States.

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A series of the largest photographs in the world, which include a number of 12-foot views of Ottawa's pulp and paper industries, will be exhibited by the city at the Travel and Vacation Exhibition which will be held in the Grand Central Palace, New York, March 20th to 29th. The object of this particular feature of the exhibit is to impress American pulp and paper men with Ottawa's great advantages as a centre of the industry. The views comprise representations of the J. R. Booth, E. B. Eddy, and other big pulp and paper firms, and of the Chaudiere Falls and other sources of local water power.

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In the wood room of the Dryden Timber & Power Co. the five barkers, all direct motor driven, are in position and the erection of the conveyor is nearly completed. The chipper is in place and millwrights are busy erecting the conveyors' shoots, etc. In the screen room three beaters and screens are in place. The equip-

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ment in the recovery room is all in place and the erection of the smelters will be hurried on as soon as the steel work arrives. One of the turbines being in position and the arrival of one of the 750 kilowatt gener-

ators soon will enable them to be ready to start up with one unit at an early date. There seems little doubt that the whole mill will be running at full blast early in the spring.

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Mr. James Beveridge, president of the New Brunswick Pulp & Paper Co., Ltd., on the 21st ult., delivered a very interesting lecture on the pulp industry of Canada at Chatham, N. B. The lecture was illustrated by fifty-six lantern slides, showing the papyrus plant. Japanese and Chinese paper, the origin of wood pulp manufacture, the different processes employed in paper making, etc. A number of interesting plates showed wood camps, with their reading rooms and other modern conveniences. The large audience who heard Mr. Beveridge thoroughly enjoyed his presentation of the subject.

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The Belgo Canadian Pulp and Paper Co., Ltd., Shawinigan Falls, have placed an order at the recommendation of their engineer, Mr. Statler, for a double beater, with J. Marx & Co., Ltd., of London, England. This is their well renowned type of basalt, lava stone, roll, on one side and steel on the other. Both rolls have separate centre drive and give fine results on all grades of stock. It is the plan, if this beater gives the results expected, to entirely replace the single beaters. With the new sizing process which they are also installing, we predict that their news sheet will be very popular with the trade.

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There seems to be likelihood of Mackenzie & Mann taking over the Quebec & Saguenay Railway, and possibly the Quebec Railway, Light, Heat & Power Co. Engineers of the Canadian Northern have gone thoroughly into the possibilities of the street railway system and of the Quebec & Saguenay Railway, including the branch line running from Quebec to St. Joachim, and have for weeks been engaged in an active inspection of the physical qualifications of the properties. One of the important factors in the deal is that the charter of the Quebec & Saguenay covers possible construction in the Saguenay district, now traversed by the Quebec & Lake St. John Railway, one of the properties of the Mackenzie-Mann interests. These are Forget interests and are tied up with the Eastern Canada at Murray Bay.

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At the annual meeting of the Victoria Paper and Twine Company a most successful year was reported, there being a very gratifying increase in volume and earnings. Charles F. Hubbs, of New York, was re-elected president; William H. Howe, of Buffalo, first vice-president; R. W. Gallagher, of Buffalo, second vice-president; H. J. Severance, of Buffalo, treasurer, and Charles V. Syrett, of Toronto, secretary and managing director. Other directors elected were R. E. Charles and C. S. Nicholls, of Toronto. The business proceedings were followed by a very jolly banquet, at which Mr. Hubbs and Mr. Syrett presided.

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"Grand Forks, B.C., offers splendid inducements for the establishment of a pulp mill at this point," said Mr. Alexander Robinson, formerly senior member of the Robinson & LeQuinne Lumber Company. "The paper mill at Spokane, which at present draws its supply of pulp wood from Bonners Ferry, will readily purchase all of the pulp which can be produced in this city in the next fifteen or twenty years. Cottonwood is the best wood from which paper pulp is made, and this section has a practical supply to keep a mill running for many years. It would cost in the neighborhood of a half million dollars to erect a 50-ton-a-day pulp mill in this city, and I am interesting outside capital in the enterprise."

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The outlook for lumbering is worse than ever. During the past month les snow has fallen in eastern sections than has been the case in January for fifty years, and what little has fallen has nearly all melted. In the woods the ground is covered fairly well with a thin layer, but not enough to fill up holes and cover brushwood. In the open the roads and fields are bare. It now seems inevitable that much of the lumber cut this season will have to remain until another winter before it can be hauled out. Of course it is possible that we may get some good snowfalls yet, but the sun is getting stronger every day, and good snow roads for this winter are practically indespaired.

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The new mill of the Donaconna Paper Co., which will be erected at Cap Sante, near Quebec city, will be an entirely fireproof structure and built of brick and cement. The buildings will be 550 feet long and 125 feet wide. The contract for the Fourdrinier paper machine has just been awarded to the Bagley & Sewall Co., of Watertown, N.Y. The machine will be 160 inches wide and capable of travelling 700 feet per minute. It will have three sets of presses, thirty-four 48-inch dryers and one ten-roll stack of calenders. The grinders will be supplied by the Jencks Machine Co., of Sherbrooke, Que. There will be a concrete dam 1,250 feet long. The output of the plant will be about 60 tons per day of news print paper.

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J. C. Mackintosh & Co. says of Price Bros.' outlook: "While the designed capacity of the pulp and paper making units of Price Bros.' new mill contemplate an output of 50,000 tons a year, provision for expansion has been made, and it is expected that this plant will exceed that figure. The new plant is expected to increase the annual earnings by at least $500,000 when in full operation, but this figure will not, of course, be realized in 1913, as it was well on into January before any paper was made. However, the company itself expected to be able to make a profit of $10 per ton on the paper from the new mill, and accepting the estimate of 50,000 tons per year, this gives the figure mentioned above, as soon as the plant gets into full working order, which will be during the early half of the present year."

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Judge F. A. Geiger, of the Federal Court for Eastern Wisconsin, presided in the case recently of E. A. Edmonds against the Spanish River Pulp and Paper Co., of Espanola, in which the former is suing for the recovery of $100,000 paid to the company in 1909 as part payment on a deal involving more than $2,000,000 and which looked to the ultimate purchase of the Canadian property by the Appleton man. Mr. Edmonds' contention is that the Canadian company could not give him a clear and permanent title to much of the lands involved in the deal, and for that reason refused to continue negotiations. Judge Geiger has heard the arguments on both sides and has taken the case under advisement. He will give his decision in the near future. If it is satisfactory to both parties no further litigation will follow, but there is a possibility of an appeal.

NEW INCORPORATIONS

Gaskell-Odlum Stationers, Ltd.; Vancouver, B.C. To change its name to "Gaskell Book & Stationery Company, Limited."

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Ratcliffe Paper Co., Ltd., Toronto; incorporated with capital $100,000, with Mr. Fred L. Ratcliff president. is taking over the business of Douglas & Ratcliff, Ltd., to deal in all grades of paper.

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McLaren Lumber Co., Ltd. To acquire timber leases, manufacture timber, pulp wood, pulp and paper; to sell light, heat and power. Capital stock $1,250,000, divided into 12,500 shares of $100 each. Head office, Toronto, Ont.

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Consolidated Agency, Ltd., Toronto; capital, $200,000. To acquire, print and publish newspapers, journals, books, do business as printers, stationers, engravers, bookbinders, etc. C. H. C. Leggott and B. Webster, Toronto, Ont.

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The Fred W. Halls Paper Company, Limited, has been incorporated with a capital of $40,000, to carry on the business as paper manufacturers in all its branches, with head office at Toronto. The provisional directors are H. H. Halls, contractor; F. W. Halls, traveler, and A. A. Bond, solicitor, all of Toronto.

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The Home Pattern Company; incorporated under Pennsylvania laws, is authorized by Ontario Government to print and publish books, magazines, charts, patterns for the manufacture and ornament of garments from paper or other materials, using a capital in that province of not larger than $40,000. Robt. C. Donald, Toronto, attorney.

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The Silverbrook Timber and Development Co. Ltd., incorporated as a limited company, with a capital of two hundred and fifty thousand dollars, divided into two thousand five hundred shares. The head office of the company is Fernie. To deal in timber lands, licenses, etc; to carry on timber and pulp business, as well as acquire and operate power developments.

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St. Lawrence Pulp and Lumber Corporation, New York City; capital, $200,000. Incorporators: Sidney V. Morris, 471 West Twenty-second Street, New York City, fifty shares; T. N. Pfeiffer, 52 West Thirty-ninth Street, New York City, twenty-five shares; Charles H. Stanton, 105 Berkeley Place, Brooklyn, N.Y., twenty-five shares; directors: Ralph P. Buell, Bayside, L.I., N.Y.; Solomon F. Glenn, 322 Cooper Street, Camden, N.J.; John Davidson, Rutledge, Pa.

Ritchie & Ramsay, Limited, Toronto, have just sent out handsome folders demonstrating the coated papers that they are making. Among the papers are "Luxacoted" porcelain, "Red Seal" and suede finish gray, India and white, all of which are beautifully printed in black and colors.

ABITIBI PULP & PAPER MILLS, LIMITED.

William Whyte, the newly-appointed manager of the Abitibi Pulp & Paper Mills, Ltd., says that the township of Teefy, in which the company has the right to cut wood, is remarkable for pulp wood, being filled with large sound trees, running 60 to 70 feet high, and in many places yielding 30 cords to the acre, while the average amount of pulp wood is not less than 13 to 15 cords to the acre. He adds in his report to the directors: "My candid opinion is that with all the pulp wood and water power available the Abitibi proposition should prove a wonderful success."

The company is now busy with the arrangements for establishing a mechanical pulp mill at Iroquois Falls, on the Abitibi River, about six miles northeast of Iroquois Falls Junction, on the Temiskaming and Northern Ontario Railway. A branch of the railway will be running to the site of the mills by June next. The first unit of the plant is to be followed by a paper and chemical pulp mill.

The company has secured a lease of the water powers of the Iroquois and Couchicing Falls, and has the right to hold and control the waters of the Abitibi Lakes for power purposes. These lakes, though shallow, are of enormous size, and will give the company an unfailing supply of water all the year round. The company has three waterfalls, all close together, the total power available being 57,195 shaft horse power.

The company's agreement with the Ontario Government, dated August 20th, 1912, grants the right to cut pulp wood, consisting of spruce, balsam, jackpine, poplar and whitewood trees, 7 inches and upward in diameter, at two feet from the ground, sufficient to supply the mills to be erected, from an area approximating 1,560 square miles. The agreement covers a period of twenty-one years, and is renewable. The agreement also stipulates that a pulp mill be erected at or near Iroquois Falls, having a capacity of not less than 100 tons of pulp per day, and employing at least 250 hands on an average of at least ten months of each year, and that the total expenditure for the plant will be at least $500,000. Of this $100,000 must be expended within one year from date of agreement, and not less than $200,000 within two years, the entire half million to be expended within three years.

The capital of the company is $1,500,000 bonds authorized, $1,000,000 paid up, $1,500,000 preferred authorized, $1,000,000 paid up, and $3,500,000 common, all of which is paid up. The whole of this capital has been underwritten, but will not be offered to the public until the late summer, when the construction of the plant will be well under way. The machinery is under construction, and about 200 men are at work on the property. It is expected that the plant will be on a producing basis early next year.

COMMERCIAL HANDBOOK OF CANADA

"The Commercial Handbook of Canada" ninth year, 1913, or as it is more familiarly known, Heaton's Annual, price $1.00, published by Heaton's Agency, Toronto, Canada, is a valuable publication, containing in its official directory the names of the Dominion and Provincial Cabinets, Members of Parliament, Members of the Senate, departmental officials, etc., and under other heads much valuable matter pertaining to rates of postage, parcel post, etc., financial information, commercial regulations, registration offices, credit reports and collections, transportation matters, customs information, and a mass of general information about Canada and its resources.

MONTREAL PAPER MEN ON TAFT'S DECISION.

(Correspondence of Pulp and Paper Magazine.)

Montreal, February 13th, 1913.

The latest decision of President Taft in regard to the paper controversy, has excited fresh interest among pulp and paper men in this Province. In fact, little or nothing is being discussed among the trade except the various phases of this question. It must be admitted that President Taft's decision came somewhat as a surprise. It was felt that while the matter was held up pending an investigation, the logical outcome of the investment would be a decison on President Taft's part admitting it free of duty. He is criticized as having taken an extreme view of the situation.

It is pointed out that Section 2 governs such matters absolutely. This section says: "There shall be no duty on paper made from wood which is free from restrictions." The order-in-council of the Quebec Government covers that in the case of these four companies, but President Taft holds to the view that the order-in-council simply refers to paper and not to pulp wood and wood pulp. In brief, the Americans want to have access to our pulp wood, and President Taft's action is regarded as an effort to coerce this Province into yielding.

In an interview, Mr. J. N. Greenshields, of the Wayagamack Pulp and Paper Co., said:

"We are not worrying about the matter at all. We confidently expect that the Democrats when they come into power, will put paper on the free list, and as they take office in less than a month's time, we are not worrying at all."

Another prominent paper manufacturer discussing this matter said:

"Notwithstanding the decision of President Taft, I feel that this whole question should be brought before the Tariff Board of General Appraisers of New York."

Concluding, the manufacturer said: "The whole situation is governed by the fact that Quebec possesses the pulp wood of this continent, and this act on the part of the United States Government is simply an effort to obtain access to that wood. The United States Government have frankly said that Section 2 was put there for the purpose of obtaining our wood. All that we have to do is to "sit tight" and not give way an inch, and in a short time the United States will have to give us free entry for our pulp and paper. It seems to me unfortunate that the four companies in question had not waited a little while. If we had let matters stand a short time, the United States would be compelled to open their doors and admit our pulp and paper. The action of these four companies complicated matters. Before their interference, everything was in a satisfactory condition, and things of a favorable nature to us were developing. However, all that we have to do is to 'sit tight' and refuse to surrender our wood. In this case, we hold the whip hand, and the United States must recognize this sooner or later."—R.

BOUNTIES ON WOOD PULP IN AUSTRALIA.

A bill has been introduced into the House of Representatives of Australia to provide for the payment of bounties on wood pulp. It provides that a sum of £75,000 may be appropriated out of the Consolidated Revenue Fund for the payment of bounties during a period of five years from 1st January, 1913.

The bounties proposed to be paid, under certain specified conditons, on the manufacture or production in Australia of wood pulp is 15 per cent. of the market value and not to exceed a total of £5,000 to any one year.

BRITISH TRADE NEWS.

(Special to Pulp and Paper Magazine.)

London, Feb. 8, 1913.

British wood pulp traders, as a rule, keep a very keen eye on the French markets, particulars of which are not often available from a right-hand source. In a conversation your correspondent had a week ago, with a large French importer, he learnt that sulphite in France is rising in prices, so much so that paper makers do not like the present outlook. The market is, therefore, one that Canadians might well give a little attention to just for the present, as the French supplies are very limited and the demand is enormous. Sulphite unbleached (1st quality) is going from Fcs. 24 to Fcs. 27, bleached (superior) Fcs. 30.50 to Fcs. 33 per 100 kilos, c.i.f. Rouen. Then for mechanical the market is firm, but no business worth speaking of is being exchanged as the sellers and buyers will not give away to each other. The latter body are waiting to see how fluctuations will go. Pine (dry) is at present Fcs. 13 to Fcs. 14.50, and pine 50 per cent. moisture, Fcs. 12 to Fcs. 13.50. British importers of wood pulp do a fair amount of business with the French buyers and the state of the markets in France should be watched with interest.

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The balance sheet of one of the Lancashire paper mills, viz., the Ramsbottom Paper Mill Co., Ltd., has been issued, and it gives a fair idea of the progress made in the industry in 1912 for a small concern. It shows that the gross trading profits, after payment of directors' fees, were £9,519. The company holds 45,000 ordinary shares, valued in the balance sheet at cost, in the Kellner-Partington Paper Pulp Co., and dividends were received from this source amounting to £9,000, and £9,055 being brought forward the total reaches £27,574. The directors have placed £2,000 toward the depreciation fund and recommend a final dividend of 25 per cent. per annum on the ordinary shares, making 20 per cent. for the year. The sum of £12,231 is now carried forward. In 1911 the trading profit was £8,454, and the total available £25,398; for 1910, £6,519, and £20,587. For 1911 20 per cent. was paid, and 1910, 15 per cent. It must be also mentioned that the company have other investments to the amount of over £24,000. For he past half-year the Guard Bridge Paper Mill Co., Ltd., have declared an interim dividend at the rate of 12 per cent. per annum on the ordinary shares. This is one of the Scottish mills and the balance sheets show the success that has attended these mills.

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The removal of the $5.75 per ton on paper leaving Quebec for the United States, has caused a good deal of discussion in the United Kingdom amongst Free Traders and the Tariff Reformers. From what your correspondent can gather in conversation with a number of paper men, the general opinion prevails that this should not be made a party subject—that is that politics should be buried where there is a chance of extending the Canadian market. Tariff Reformers are out and out men for the protection of home industries and they do not believe in cases, like the present one in Quebec, in hampering an industry with an export tax, particularly as there is a chance of increasing the output of the mills. On the other hand Free Traders are against taxation—they require free trade all round and naturally they agree with the Gouin Government's order-in-council. Therefore, the two parties in England are in favor of the removal of the embargo; but one or two manufacturers expressed a lurking suspicion of the course the United States Government will take in the matter and they are consequently awaiting the result with great interest. One Tariff Reformer remarked that Canada's finest sources and pulp wood supply must be carefully guarded against foreign invasion and the spirit of protection must be rigidly enforced. "The whole American nation is against Canada's pulp and paper Reciprocity Act," he added, "and in

all probability this new order-in-council will add insult to injury. Personally, I am against the export embargo.''

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Talking of Tariff Reformers, here is an interesting letter for Canadians, which Messrs. A. M. Peebles & Son, Ltd., of 151 Queen Victoria Street, London, owners of paper mills in Lancashire, write: ''Speaking from our own experience we recognize that many of the large British publishing firms of repute will only use for their publications—large as well as small—British-made paper, which of course is greatly to their credit; but there are unfortunately, notable exceptions to this salutary rule, who in their desire to capture the whole of the trade entirely forget to practice the principles which they are ready enough to preach namely the support of home industries and the adoption of some sort of Tariff Reform. . . . . We have at the present time in this country the finest paper mills in the world capable of supplying the needs of all publishers in the Kingdom with papers suitable for the wear and tear incidental to the use of cheap libraries. Foreign paper, as a rule, for this class of work is very unsuitable, being of inferior quality and liable to perish quickly. We, ourselves, have recently on several occasions, been cut out by the foreigner who is able to send his paper into this country without contributing one farthing to heavy tax which the home producer has to pay.'' Most of the cheap papers are imported into the United Kingdom from Sweden, Germany, and Norway; but it must be stated that people of Messrs. Peebles' stamp will encourage Canadian paper before any foreign product, and in that feeling they are shared with nearly every mill-owner in England.

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Apropos of China clay notes in The Pulp and Paper Magazine of January 15, it should be stated that about half a dozen new companies are being formed to turn out this paper-making material in England. The Royal Cornwall Gazette makes a statement to the effect that there is no likelihood for some time to come of the production catching up to the demand. The clay works in Cornwall were all working at full capacity, day and night, and all the firms had booked orders so far ahead that they could not undertake fresh orders for early delivery. Is it any wonder, therefore, that complaints should be received from the United States about the shortage of China clay? Cornwall is expected to turn out 1,000,000 tons this year and yet it will not be enough. As already stated this is a product that Canada will have to give some little attention to in the near future. There is money in China clay and if properly treated for the paper makers the demand will far exceed the supply.

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The railway companies of England and Wales, like those in Canada, are enforcing a new list of charges for demurrage in order to get greater use out of their wagons by making it costly to detain them longer than the companies consider necessary. Wagons have been allowed to remain so long at some places that even the birds of the air have built their nests in them. The new rule, as a consequence, has placed a very plentiful supply of wagons in the hands of the railway companies to deal with and the scheme will ultimately work out successful.

THE BRITISH MARKETS.

(Special to Pulp and Paper Magazine.)

London, Feb. 8, 1913.

The chemical wood pulp market in England and Scotland is not very brisk just now. Paper makers are well-stocked, and it will take a couple of weeks or so before the market presents any sign of life. Sulphite, bleached and unbleached, is likely to become dearer in the near future. Prices, reported in The Pulp and Paper Magazine of February 1 are unchanged.

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In mechanical a fair amount of business is passing, and if Canadian supplies were received more frequently, not only in the English markets, but in the European markets, buyers believe there would be a reduction in prices. At present mechanical pulp is firm and prices unchanged.

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Since the beginning of January the following were the imports of wood pulp from Canada and America: Canada, mechanical wood pulp, 2,459 tons; America, unbleached chemical dry, 20 tons; bleached chemical dry 337 tons. No shipments, of course, are now received from Newfoundland. About 2,000 tons of mechanical from Canada was distributed in Lancashire mills in one week.

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China clay is going from $3.82 to about $9.50 per ton f.o.b. Cornwall, according to arrangements. Owing to the high freights and shortage in shipping prices are inclined to rule high and consequently the demand at times becomes excessive. Stocks are very low.

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Changes in prices of chemicals are fairly numerous. Bleaching powder is in great demand and stocks are small at all works. During the past twelve months chemicals have increased very materially in prices, except ammonia alkali, and it is greatly to be feared that 1913 will bring more advances owing to the cost of raw materials and cost of labor. Bleaching powder is now quoted at $27 f.o.b. Liverpool. Owing to the fall in copper, makers are not very desirous to do much business in sulphate. Rosin is quiet; but American rosin is in fair demand.

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Enquiries for early spring shipments of Esparto are being received, but for distant periods sellers are inclined to quote modified prices. Esparto pulp is scarce, prices ruling from $90 to $96, according to arrangement.

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Roughly 220 tons of rags and paper stock were imported into Canada from the United Kingdom during January.

STATE OWNERSHIP OF FORESTS IN THE UNITED STATES.

One of the greatest public ownership enterprises in the world is that found in the United States in the national forest reserves. These reserves, under the control of the national government, cover no less than 187,000,000 acres. The area so covered is primarily adapted to the production of timber and the protection of sources of water supply by maintaining a timber covering on the land. Most of the reserves are in rugged mountainous areas in the Rocky Mountains and Sierra Nevada ranges, as well as portions of the coast ranges. These national forest reserves include the head waters of every important stream in the western two-thirds of the United States. Their standing timber aggregates 600,000,000,000 feet—one-fifth of the country's total supply, while the undeveloped water powers approximate 12,000,000 horse-power. The tangible assets in this property are said to be worth not less than $2,000,000,000. All the territory is not covered with merchantable timber, but much of it is covered by brush or scattered trees put in by the forest recamation service to check the washing away of the land by freshets.

PULP AND PAPER MARKETS

Toronto, February 15th, 1913.

Print output has increased slightly but the market is firmer and prices are stronger. Prospects point to a continued stability. Exports to United States and Australia are rapidly increasing and show every sign of continued growth. Inquiries from these countries are more numerous. Large orders have been booked from England and the Western States.

Book and writing are in heavy demand and prices rapidly stiffening. The demand exceeds the supply, so that orders are going across the line.

Groundwood is firmer and some is moving. Stocks are being held and the market maintained. At present 7,500 tons are on hand, which is very heavy. Present weather conditions are helping the demand somewhat.

Sulphite still holds firm, and most mills are contracted up to full capacity. Prices are at the same figures.

Manila is down slightly and will feel a 10 per cent. cut made by the mills in Ontario business this week. This is taken as a measure against the jobbers. The situation in all heavy wrappings promises to soon be the subject of price cutting.

China clay is very scarce and inquiries brisk. Many firms are substituting Canadian talc and clay at much better prices.

Quotations (f.o.b., Toronto), for paper, pulp and paper stock are as follows:—

Paper.

News (rolls) $42 to $45, according to quantity.
News (sheet) $45 to $50, according to quantity.
Book papers (carload) No. 3, 4¼c. to 4¾c.
Book paper (broken lots) No. 3, 4¼c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2, 5c. to 5¾c.
Book papers (carload) No. 1, 5c. to 6¼c.
Book papers (broken lots) No. 1, 6¾c.
Writings 4½c. to 7½c.
Bonds, 10c. to 18c.
Sulphite Bond, 6½c. to 8½c.
Fibre, 3¼c. to 4c.
Manilla B., 2¾c. to 3c.
Manilla No. 2, 3c. to 3½c.
Manilla No. 1, 3¼c. to 4¼c.
Kraft, 4c. to 4¾c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $48 to $49, delivered in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.70.
Mixed shavings, 60c.
White blanks, 90c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 85c. to 90c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.10 to $1.15.
No. 1 print manillas, 60c.
Folded news, 50c.
Over issues, 55c.
No. 1 clean mixed paper, 42½c. to 47½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.75.
Ordinary satinets, $19.75.
Floc. satinets, $1.00 to $1.10.

MONTREAL MARKETS.

Montreal, February 14, 1913.

Despite the increase in the output of paper mills, prices still hold remarkably well. Paper men state that advices from the United States all confirm their view that the outlook over there is encouraging. Stocks are said to be considerably lower in the United States than was generally believed, and there is not likely to be any further cutting in prices. American dealers are highly pleased with the way Canadians have maintained prices, as it has tended to hold up values south of the border.

The market for ground wood continues to be unsatisfactory, but if the present cold weather continues, stocks will become depleted, and there should be an improvement in prices. At present, stocks on hand are heavy, but dealers are holding rather than sacrificing. In regard to sulphite, there is only one story, viz., scarcity of stock and continually advancing prices. Advices from England state that less than 10 per cent. of the next three years' output in that country remains unsold. This is bound to effect the local market, and maintain prices at a high level. Sulphite delivered in the United States runs from $46 to $48, and in Canada from $44 to $45. Wrappings are said to be due for an advance in price, owing to the fact that sulphite is high and generally speaking, makers of wrapping paper are paying more for their raw stocks than heretofore.

The following are the prices for paper, pulp and paper stock: F.O.B. Montreal:

Paper.

News, $41 to $43, delivered in United States.
News, $41 to $42 for large orders, $44 to $45 for small orders. (Delivered in Eastern Canada.)
Newsprint, sheets, $45 to $50 at mill.
Book papers, carload lots, No. 3, 4¼c. to 4¾c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3c to 3½c.
Broken lots, No. 2, 5¼c. to 5½c.
Carload lots, No. 1, 5½c. to 6¼c.
Broken lots, No. 1, 6c. to 6¾c.
Manilla B., 3¼c. to 3¾c.

Wrappings.

Fibre, 3¾c. to 4c.
No 2 manilla, 3½c.
No. 1 manilla, 3¾c. to 4c.
Kraft, 4c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.70 to $1.80.
No. 1 soft white shavings, $1.60.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50c. to 55c.
White blanks, 80c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c.
Manila envelope cuttings, $1.05.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 50c.
Crushed news, 45c.

Good mixed paper, 40c. to 42½c.
Old white cotton, $2.50.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.40 to $3.50.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.50 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.50 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.25.
New light flannelettes, $3.75 to $4.00.
Flock satinets roofing stock, $1.10 to $1.20.
Ordinary satinets, 75c. to 85c.
Tailors' sweepings, 65c. to 70c.

Pulp.

Ground wood (at mill), $14.50 to $15.
Sulphite, No. 1 unbleached, $46 to $48, delivered in United States.
Sulphite, $43 to $45, delivered in Canada.
Sulphite (bleached), $51 to $53.

London, Feb. 6.

The Board of Trade Journal on the trade of Newfoundland, states that the total amount of stationery, printed music, advertising and other printed matter imported was $148,558, of which $35,772 was from the United Kingdom; $70,082 from Canada, and $41,854 from the United States. During the same period the books, annuals and magazines imported were from the United Kingdom to the value of $68,382, from Canada $4,170, from the United States $339,250. In the matter of printing materials, presses, type, etc., the imports from the United Kingdom were $4,217, from Canada $14,239, and from the United States $23,241. The fact that United Kingdom trade with Newfoundland has made relatively slow progress in recent years as compared with that of Canada and the United States must be ascribed largely to the advantage of geographical situation enjoyed by the latter countries, and the resulting better facilities for the transport of their products to the Newfoundland market. There would, however, appear to be considerable scope for the increase of the United Kingdom share of the trade in several important articles.

SCANDANAVIAN MARKETS.

Ottawa, Ont., February 4, 1913.

That the United States import of wood pulp is steadily increasing is the statement of C. E. Sontum, Canadian trade agent in Norway, in a report to the Trade and Commerce Department respecting the Norwegian market.

"The wood pulp market is continually firm with a rising tendency," the statement runs. "Any important changes in the prices, however, have not taken place since the last report, but are not excluded in the near future. In Germany very much is heard about the rise in the price of pulp wood in all countries, which again necessarily must influence the price of wood pulp. The United States import is also steadily increasing, which goes to prove that the large consumption necessitates a forced import from other pulp producing countries." The Swedish quotations per ton, f. o. b. Swedish ports, are given as follows: Mechanical, wet white, $9.07 to $9.87; mechanical, dry white, $20 to $21.33; sulphite, light bleached, $40 to $41.87; sulphite, strong bleached, $38 to $39.47; sulphate, light bleached, ordinary, $34.67 to $36; sulphate, strong bleached, ordinary, $34.67 to $36.

The production of sulphite cellulose in Norway and Sweden for export and home consumption, including bleached pulp, was 900,000 tons in 1912, as compared with 764,000 tons in 1911. The 1913 production is estimated at 930,000 tons. The production of sulphate cellulose in the two countries, which was about 171,000 tons in 1911, was about 185,000 tons in 1912, and is estimated at 193,000 tons for 1913.

Barbados, Feb. 10.

The importation in paper of all kinds is large, the United Kingdom supplying the greater part, Germany coming next. The United States supplies most of the Leeward Islands' requirements, but their contribution to the other colonies is unimportant. Canada's trade with the West Indies has increased in wrapping papers, but in printings there has been a falling off. The total imports from Canada at present amount to about £2,000. In no line of manufactures is there a better opening for Canadian manufacturers than in papers of various kinds, chiefly in the lower grades. Cheap freight and the preference should do much to further the efforts of firms in the paper trade seeking business in these markets.

The following list shows the value of the import into each of the colonies concerned:

Trinidad	£19,734
Barbados	7,198
British Guiana	18,530
St. Lucia	1,713
St. Vincent	850
Leeward Islands	5,218

SWEDEN.

(Special to Pulp and Paper Magazine).

Ottawa, Feb. 10.—With regard to the Swedish market for wood pulp C. E. Sontum, commercial agent for Canada at Christiania, Norway, in a recent report to the Government, writes as follows:

"The wood pulp market is continuing firm with a rising tendency. Any important changes in the prices, however, have not taken place since our last report, but some are expected in the near future. In Germany very much is heard about the rise in the price of pulp wood, from all countries, which must have an influence on the price of wood pulp. The United States import is also steadily increasing, which goes to show that the large consumption necessitates a forced import from other pulp producing countries."

Also the following with regard to the Norwegian trade:

"At the beginning of the year almost everybody connected with the trade was of the opinion that mechanical wood pulp would command very high or even exorbitant prices before the winter was over. Buyers held back, however, delaying purchases as much as possible, and as a consequence the market stagnated during January and February. Some five year contracts were reported in January at unnecessarily low prices; buyers were triumphant and hammered the price until prompt pulp for delivery during the year came down to $8.88 and occasionally even less. This slump lasted to the end of May since which time the market has slowly recovered.

"At the beginning of June, Norwegian mills would not take less than $9.06 for prompt, and many of them would not consider anything below $9.33, at which figures a good deal of business was done both for prompt and for delivery over 1913. During August the price hardened to $9.60, and in November it came nearer $9.87 net f.o.b. In December the Norwegian

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market became inactive partly because the Baltic shipping season continued longer than expected, and at the moment $9.60 to $9.87 is probably the best which may be obtained. In spite of the heavy rains in August a few mills reported water scarcity in October, but on the whole water conditions have been favorable this year at the Norwegian mills except in the northern part of the country where there was a prolonged drought during the early part of the summer. The Norwegian mechanical pulp mills have been compelled to pay much more than last year for their winter supply of logs.

"The production of sulphite cellulose in Norway and Sweden for export and home consumption, including bleached pulp, has been: 1906, 400,000 tons; 1907, 588,000; 1908, 623,000; 1909, 558,000; 1910, 734,000; 1911, 764,000; 1912, 900,000. For 1913 the production is estimated at 930,000 tons.

"The production of sulphate cellulose in the two countries, which was 171,000 tons in 1911, is estimated at about 185,000 tons in 1912, and 193,000 for the present year."

CONDITIONS IN FINLAND.

Mercator, of Helsingfors, describes the pulp market as follows:—

"The pulp market has little of interest to offer. The United States are keeping rather reserved, and the volume of orders cabled has been extremely moderate. The European Continent has been more active, and the reports from most countries are telling of activity prevailing everywhere. Especially the German paper makers are very busy, and have orders on hand for many months to come. In mechanical pulp no change is observable. The buyers continue to take off their contract quantities in a very satisfactory manner, and as a consequence the stocks at the pulp mills are very moderate, being scarcely one-third or one-fourth of the quantities a twelvemonth ago. This speaks well for the increase of the consumption of this article.

STOCKS OF NEWSPRINT.

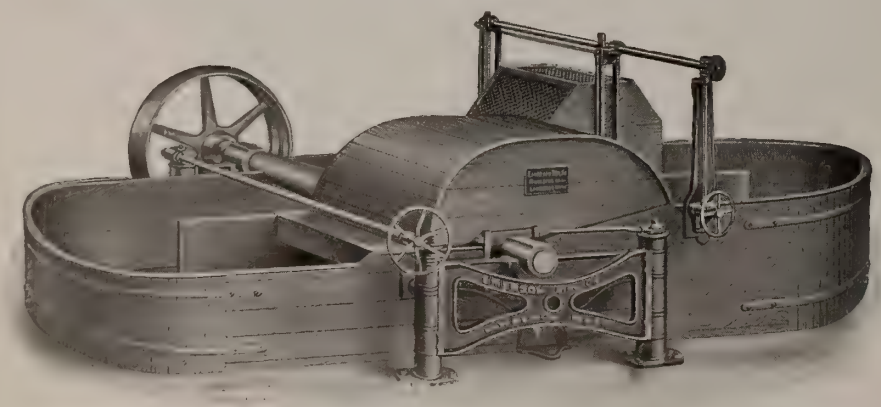
A decrease of 3,650 tons in stocks of newsprint paper in December is shown by the report of the American Paper and Pulp Association to the Commissioner of Corporations. Stocks at the end of the month were reduced to 39,852 tons, compared with 27,640 tons in 1911. Stocks have steadily declined since September. Production for December was 102,118 tons, a decrease of 4,597 tons for November. Shipments, 105,728 tons, a decrease of 4,073 tons.

Johannes Andersen, of J. Andersen & Co., Temple Court Building, who recently returned from Europe, says that sulphite conditions in Europe were unparalleled.

"All good grades of sulphites are sold out for this year and part of next," said Mr. Andersen. "I found that mills had very little pulp to dispose of and for that they were asking higher prices than are now being paid.

"There are no new mills going up but practically all old mills are being kept in operation. Improvements are being made in order to keep pace with depreciation and the fact that the present output is effective in keeping down surplus production has acted as a bar to new plants.

"While traveling through Sweden I passed the Storra Kopparbergs mill and later stopped at Falund, where it is. As you recall, they had a fire there which did quite some damage, but reconstruction had proceeded so rapidly that I could not see much trace of the fire. Work is being pushed on the plant and it should be in operation soon."



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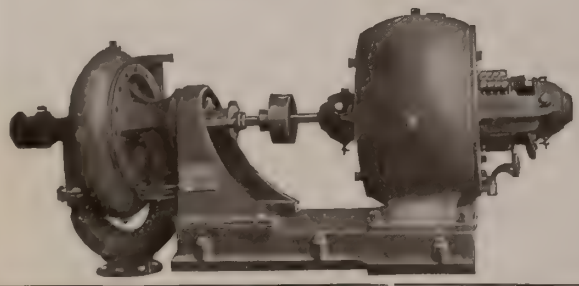
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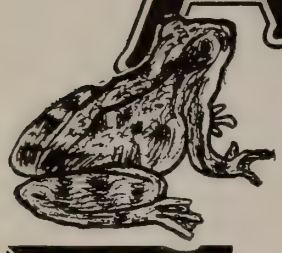
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Carthage Machine Co., Carthage, N.Y.
Canadian Barker Co., Ltd., Sault Ste. Marie, Can.
Green Bay Barker Co., Green Bay, Wis.
Jenckes Mach. Co., Sherbrooke, Can.
Hamilton, Wm., Co., Peterboro, Can.
Waterous Engine Works, Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.

Beaters
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Holyoke Mach. Co., Holyoke, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Brantford, Can.

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Bentley & Jackson, Bury, Eng.
DeCew, J. A., Canadian Express Bldg., Montreal, Can.
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Tippet Arthur P. & Co., Montreal, Can.

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Dominion Belting Co., Hamilton, Can.
Reddaway, F. & Co., Montreal, Can.
Sadler & Haworth, Montreal, Can.

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Brunner, Mond & Co., Montreal, Can.
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Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier St., Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Camel Hair Belting
Reddaway, F. & Co., Montreal, Can.

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Farrell Foundry & Mach. Co., Ansonia, Conn.

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Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter St., Montreal, Can.
Meincke, C. A. & Co., Coristine Bldg., Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Valley Iron Works, Appleton, Wis.

Cranes
Garland, M., Co., Bay City, Mich.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Northern Crane Co., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.

Conveying Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Garland, M., Co., Bay City, Mich.
Jeffrey Mfg. Co., Montreal, Can.

Cutters
West End Engine Works, Edinburgh, Scotland.
Dillon Machine Co., Lawrence, Mass.
Chambers & Simpson, Toronto.

Cylinder Covers—
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Digester Lining
Can. Boving Co., Toronto.
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Evaporators
Scott, Ernest & Co., Fall River, Mass.
Zaremba Co., Buffalo, N.Y.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Ayers, Ltd., Lachute Mills, Que.
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

MILL SUPPLIES CONTINUED

Motors
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Laying Machines
Heimbach, Thos. Jos., Ltd., Duren, Germany.
Chambers & Simpson, Toronto.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Appleton Machine Co. Appleton, Wis.
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Fischer, Julius, Nordhausen, H., Germany.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Storrer, H. F., New York, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel, Chr., Reutlingen, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Canadian Boving Co., 164 Bay St., Toronto, Can.
Canada Foundry Co., Ltd., Toronto.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Scales
Mardon, Alfred H., London, E., England.

Screen Plates
Can. Boving Co., Toronto.

Screens
Carthage Machine Co., Carthage, N.Y.
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Marx & Co., J., London, England.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel, Chr., Reutlingen, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.

MILL SUPPLIES CONTINUED

Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines

Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Kufferath, Andreas, Mariaweller, Germany.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste

Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines

Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C. & Co., Ltd., Craig St., Montreal, Que.

Kraft—

Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, J. C. & Co., Ltd., Montreal, Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—

McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

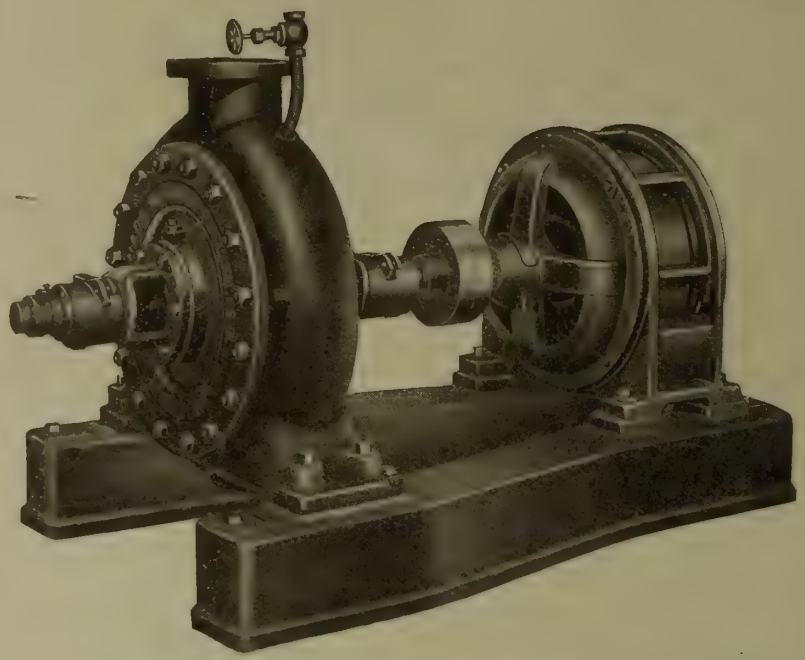
Blotting—

Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—

Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

MATHER & PLATT TURBINE PUMPS



Especially adapted for circulating pumps for Pulp and Paper Mills.

Over 100 of these pumps have been supplied by us during the past year, from Mather & Platt's designs, and built in Canada.

Let us figure on your specifications for large or small pumps.

CANADA FOUNDRY COMPANY, LIMITED

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ELECTRIC MOTORS

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❀

Alternating Current



Standard Speeds Frequencies Voltages

INDUCTION MOTORS

C. G. E. Electric Motors are noted for efficiency over wide range of loads, and are designed for strength and reliability. We have a motor for every purpose.

CANADIAN GENERAL ELECTRIC CO., LIMITED

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PAPER MILLS CONTINUED

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson & Co., Ltd., J. C., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Richard & Co., Petit Pre, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson & Co., J. C., Montreal, Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C. & Co., Ltd., 700 Craig St, Montreal, Que.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Booth, J. R., Ottawa, Ont.
Ford, J. & Co., Port Neuf, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag—
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
Wilson, J. C. & Co., 242 Craig W., Montreal, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Tissue and Toilet—
Eddy Co. The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
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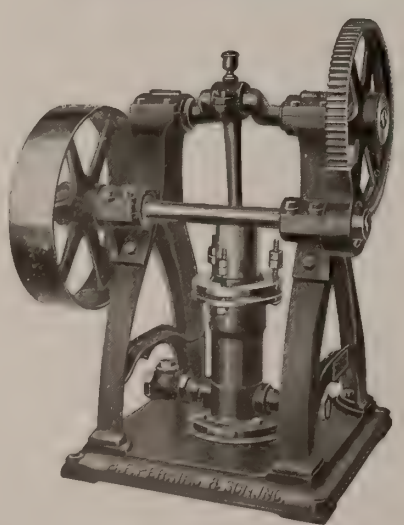
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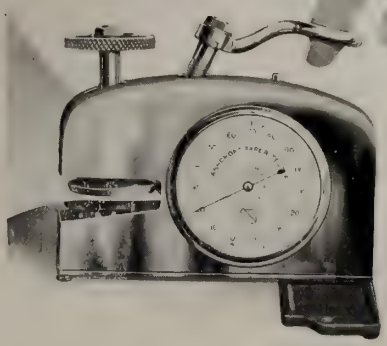


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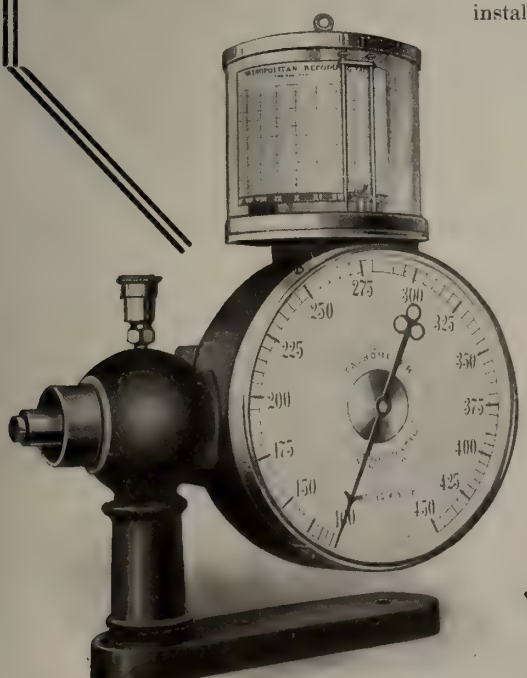
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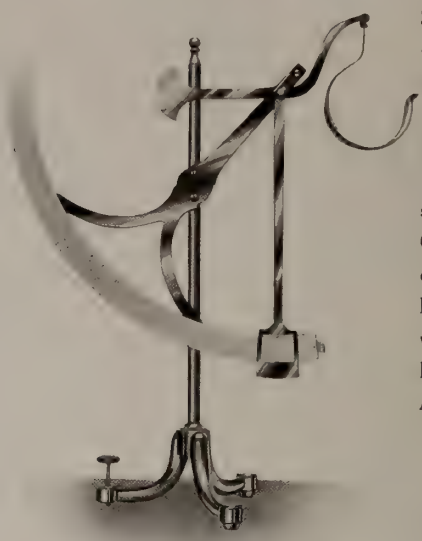
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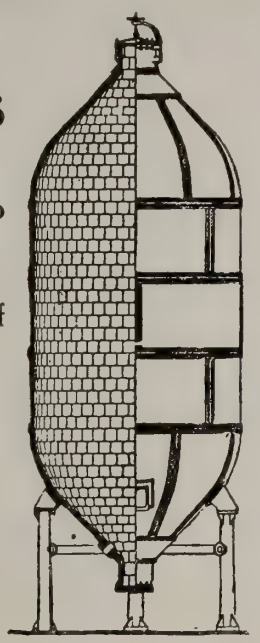
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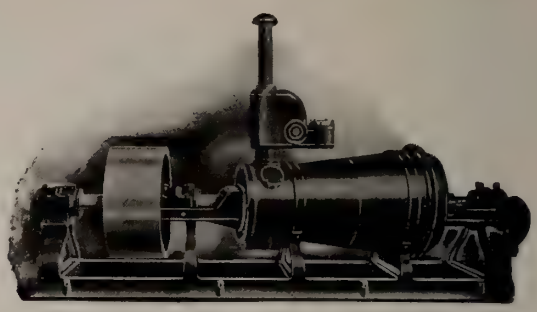
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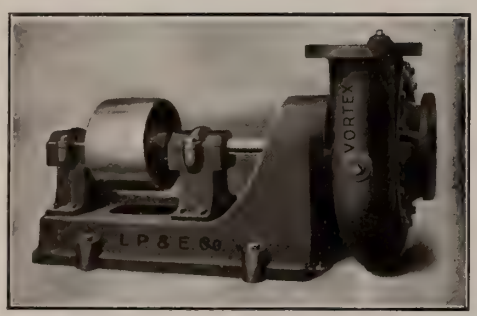
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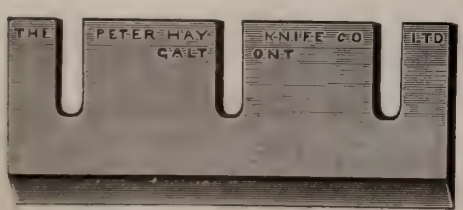
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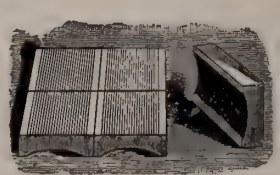
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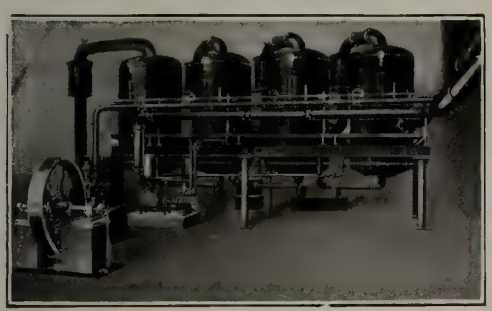
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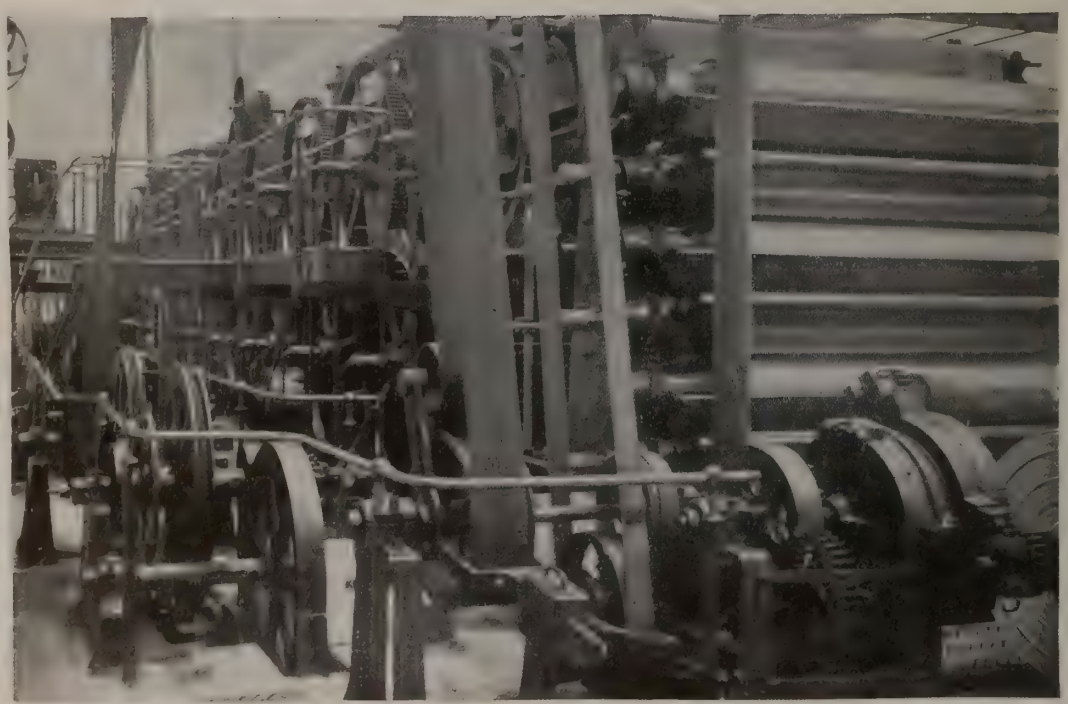
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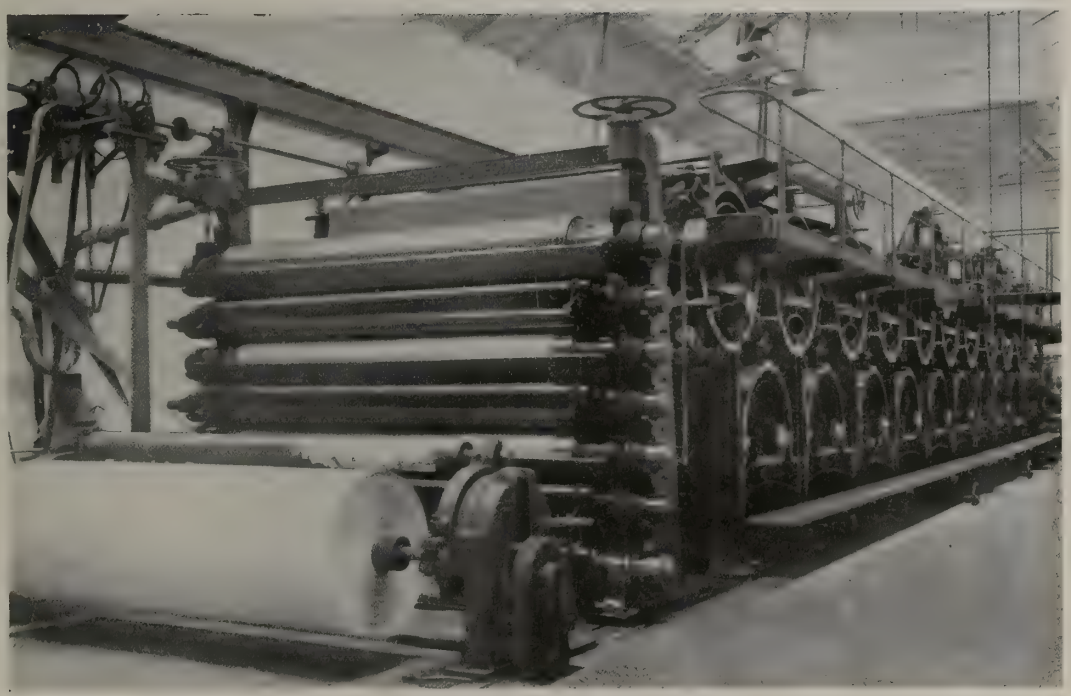
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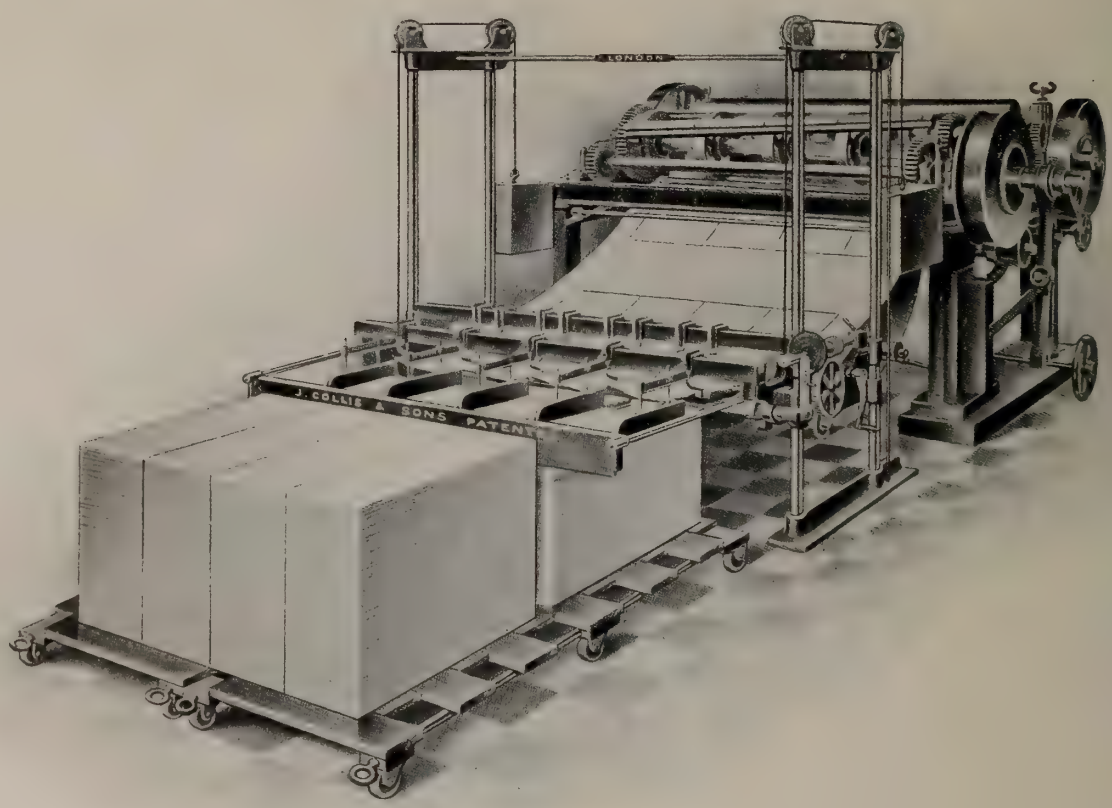
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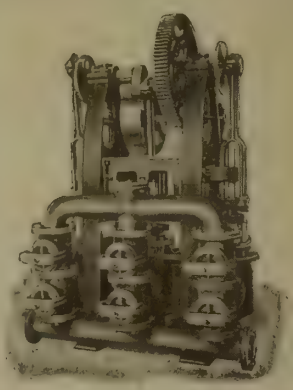
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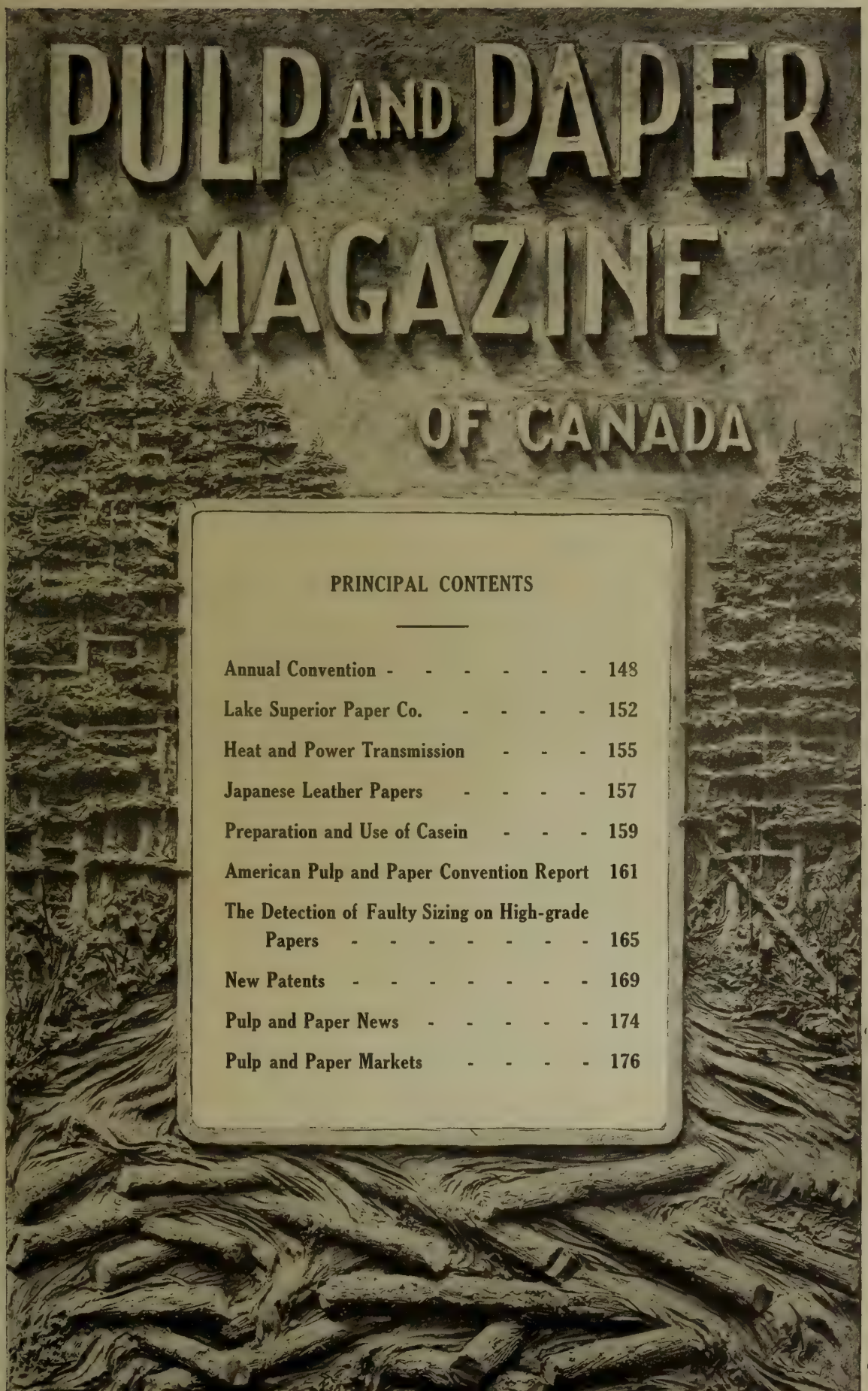
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VOL. XI. TORONTO, MARCH 1, 1913 No. 5

PULP AND PAPER MAGAZINE OF CANADA



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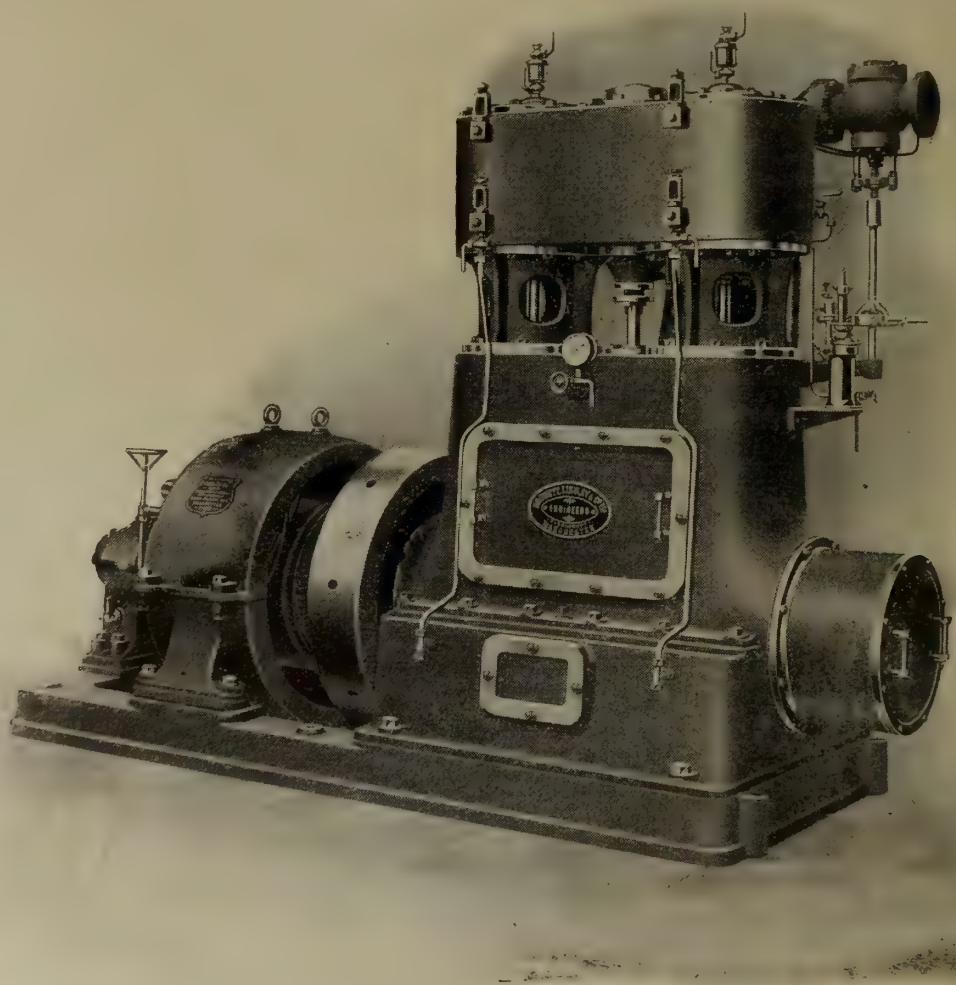
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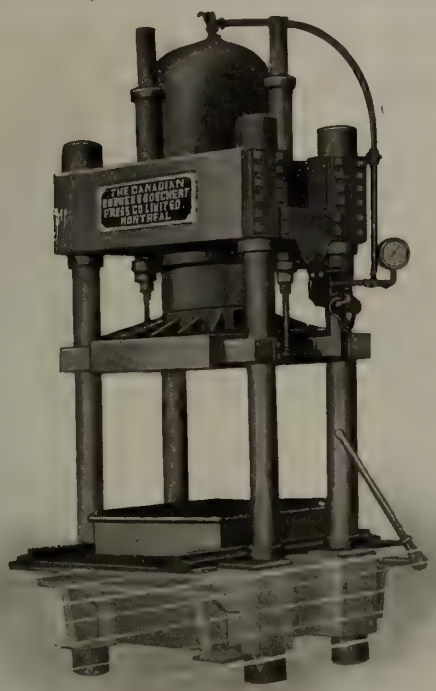
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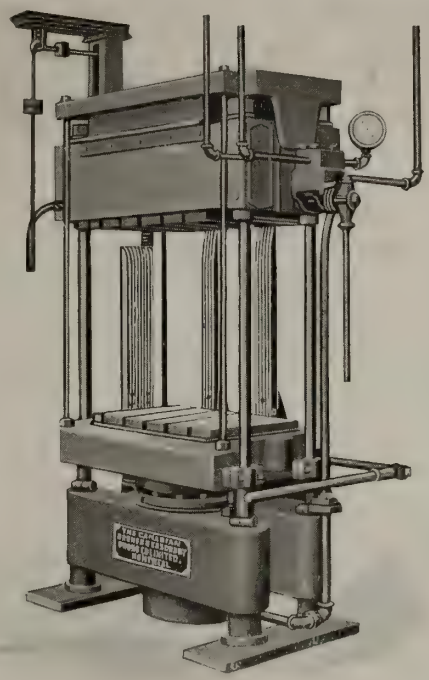
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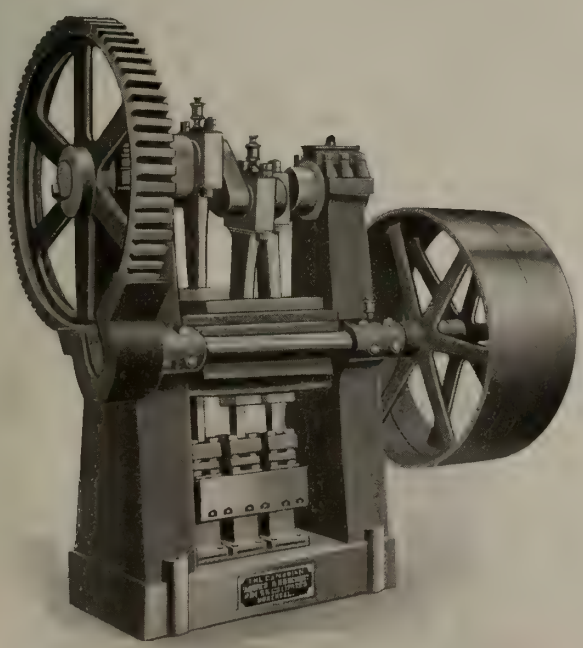
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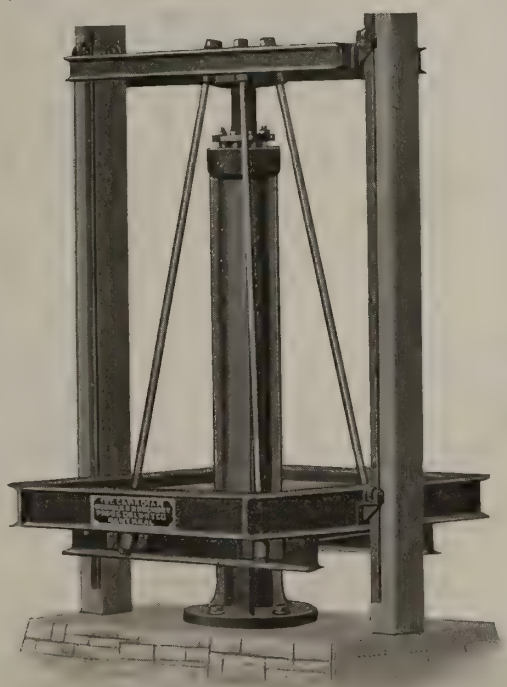
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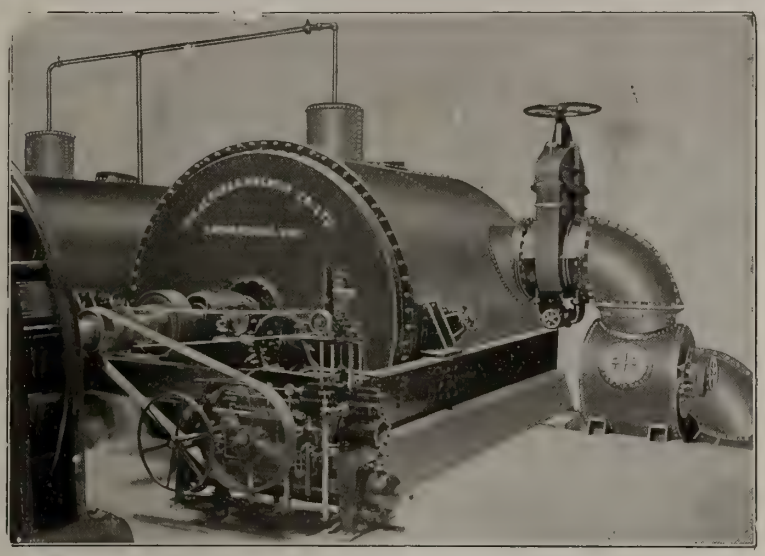
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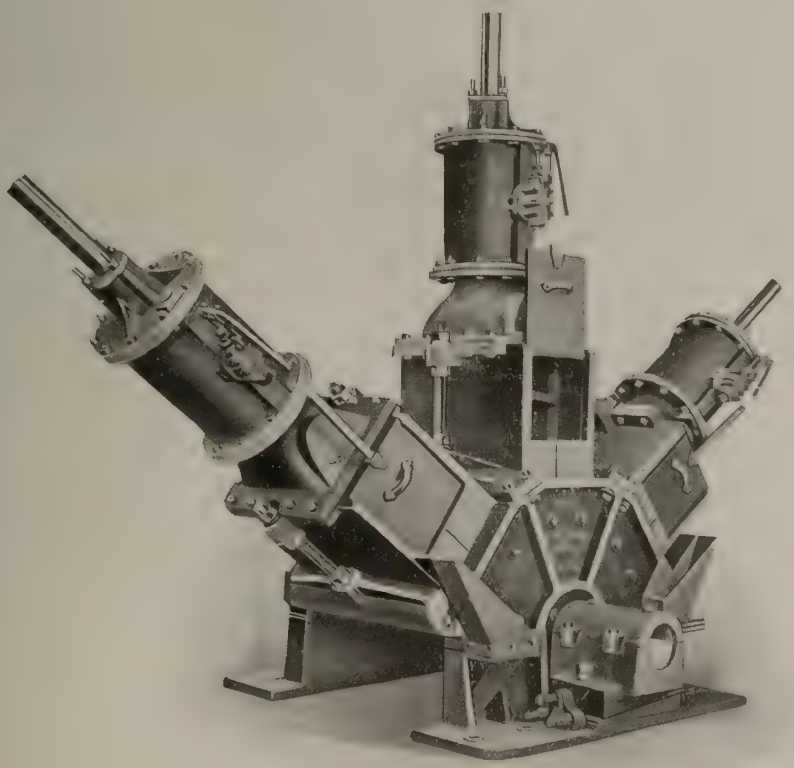
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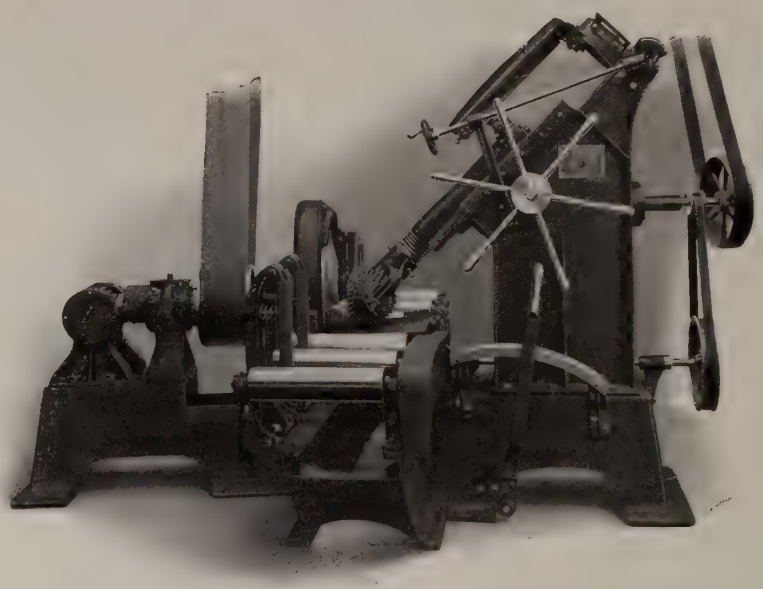
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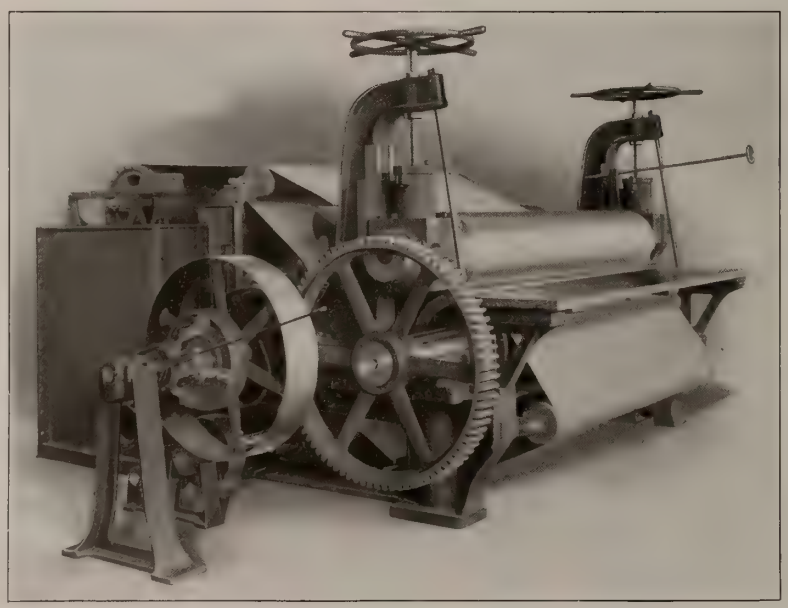
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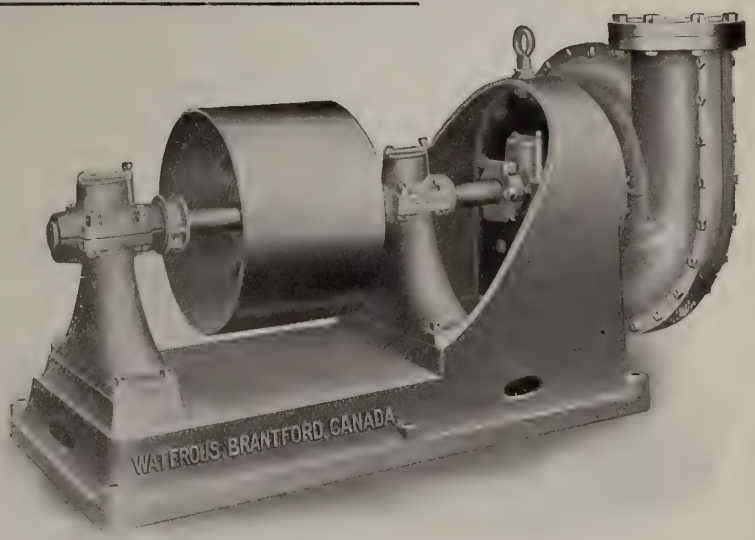
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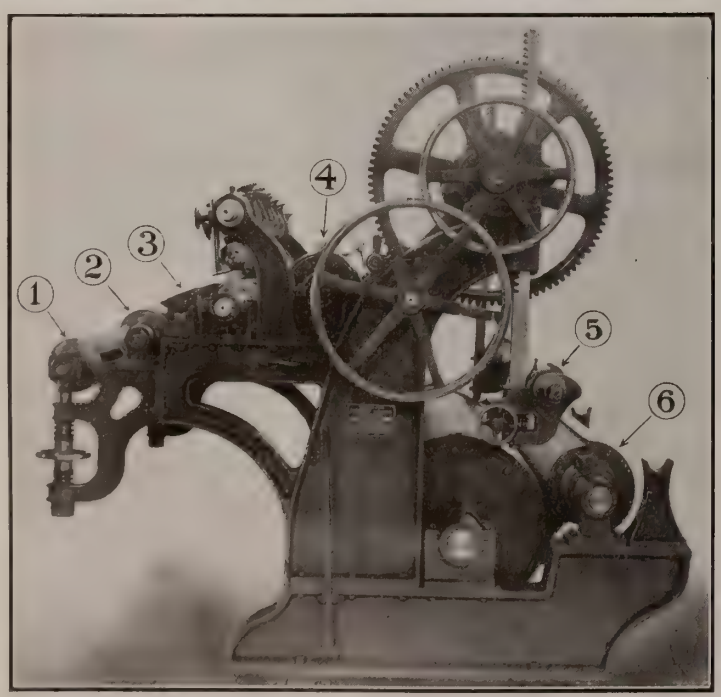
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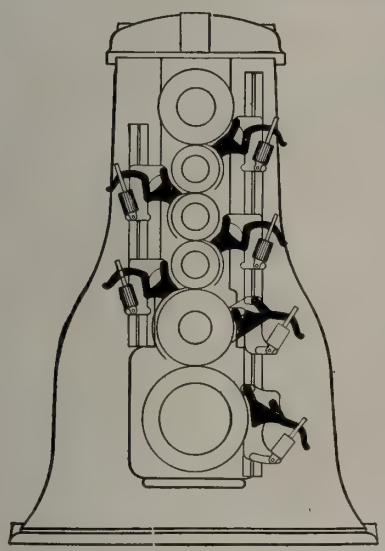
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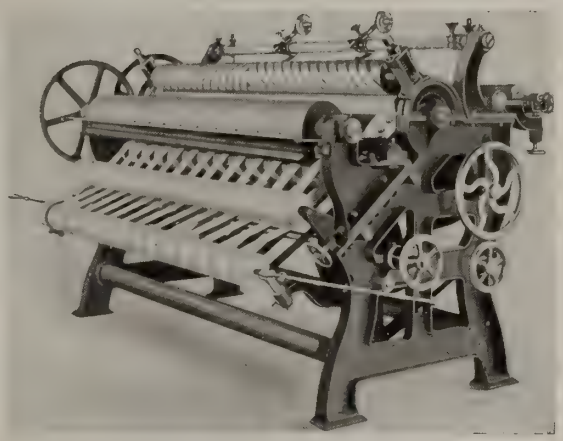
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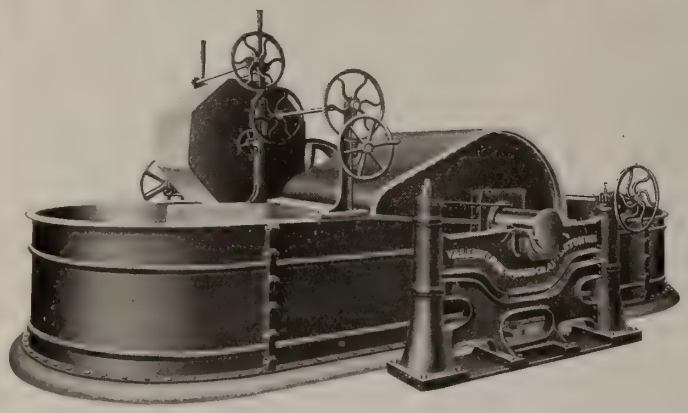
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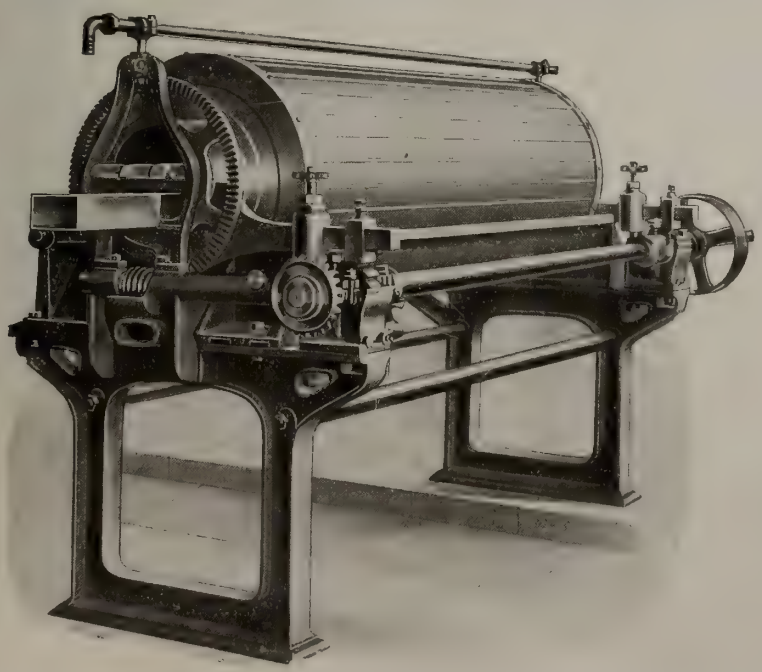
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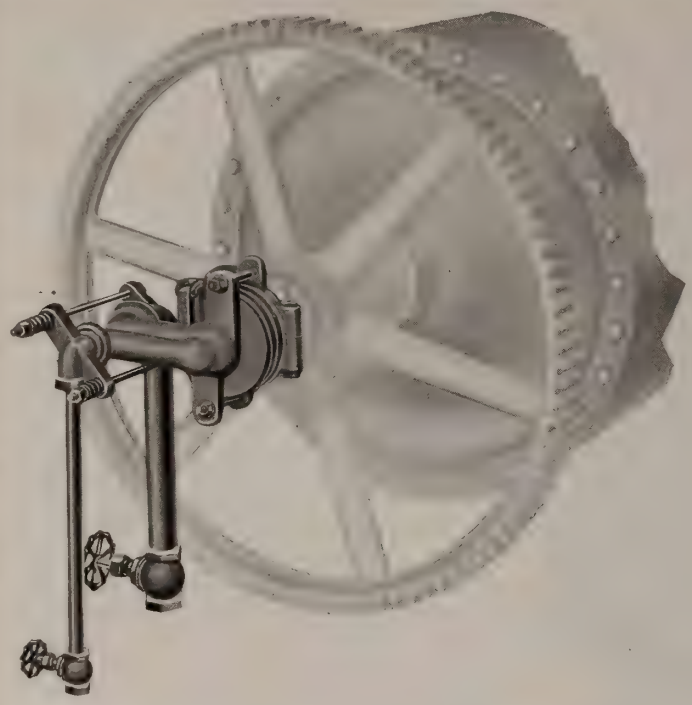
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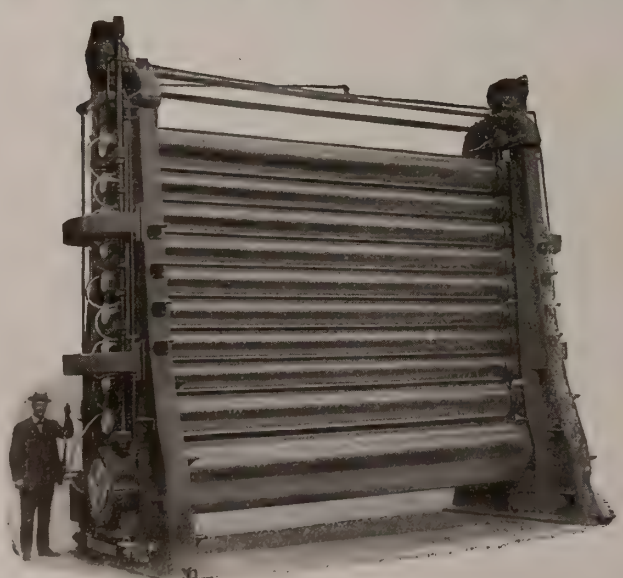
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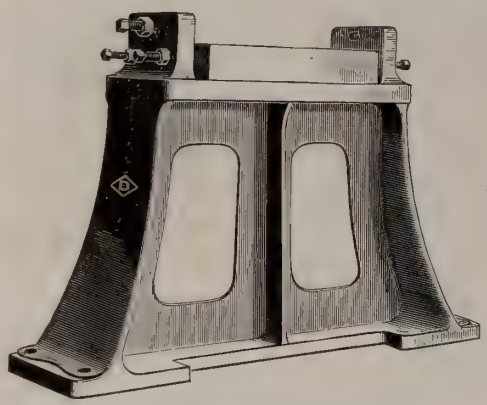
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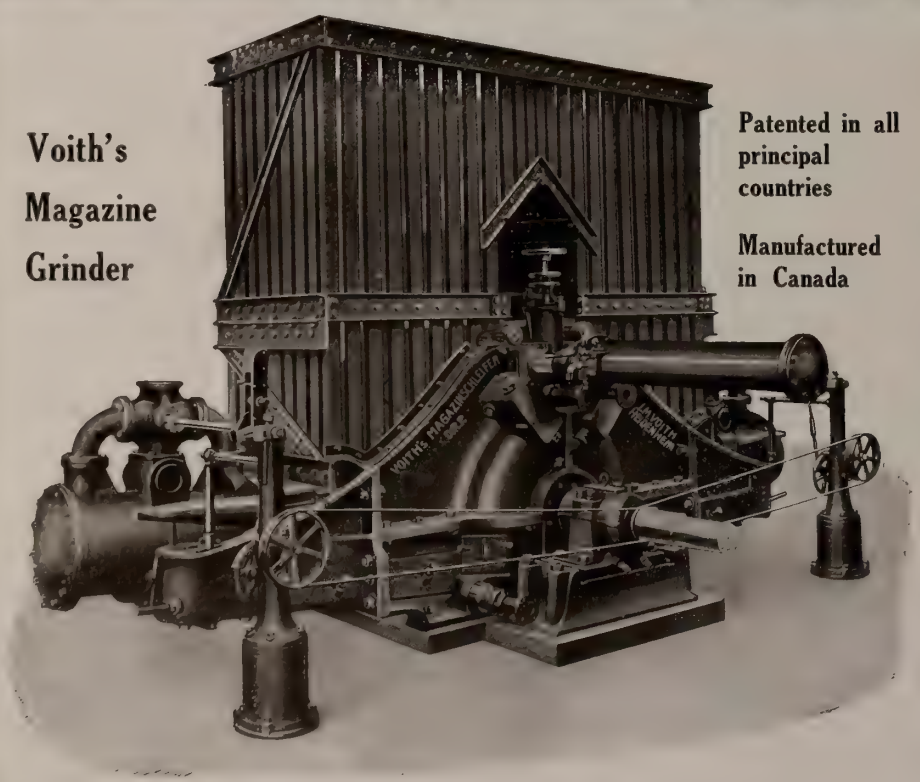
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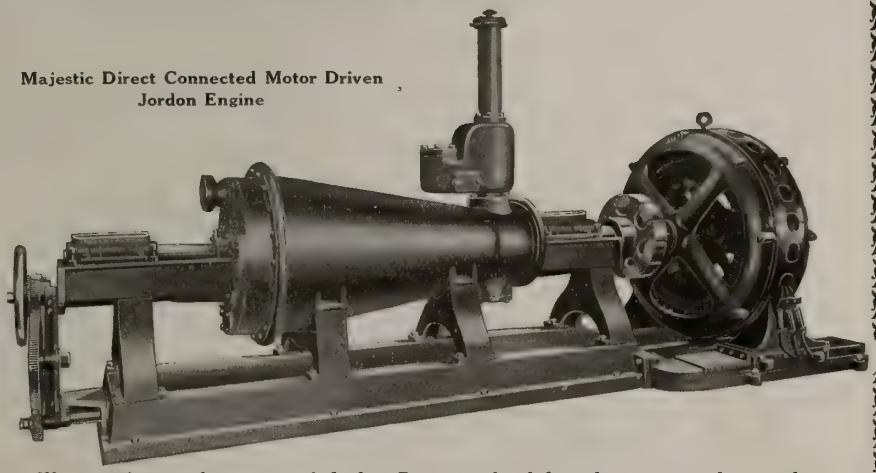
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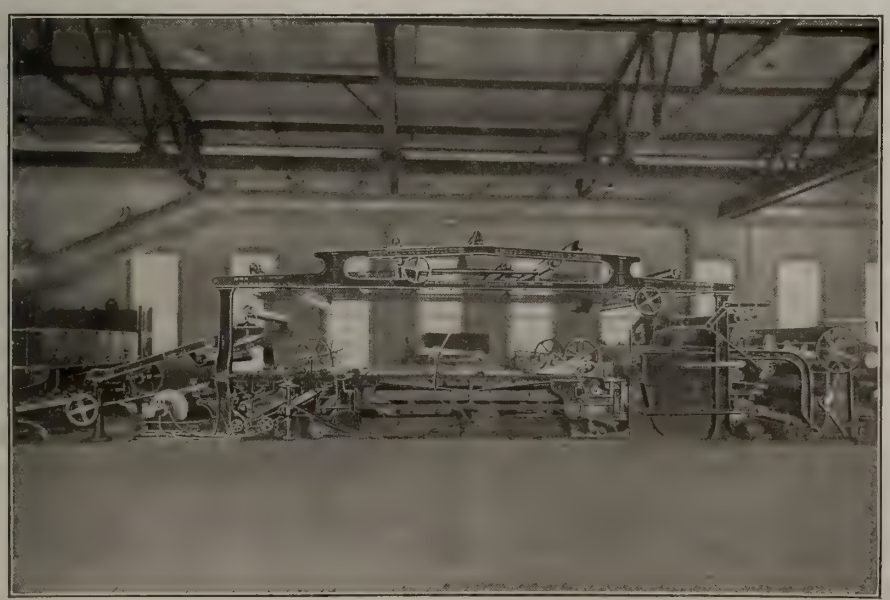
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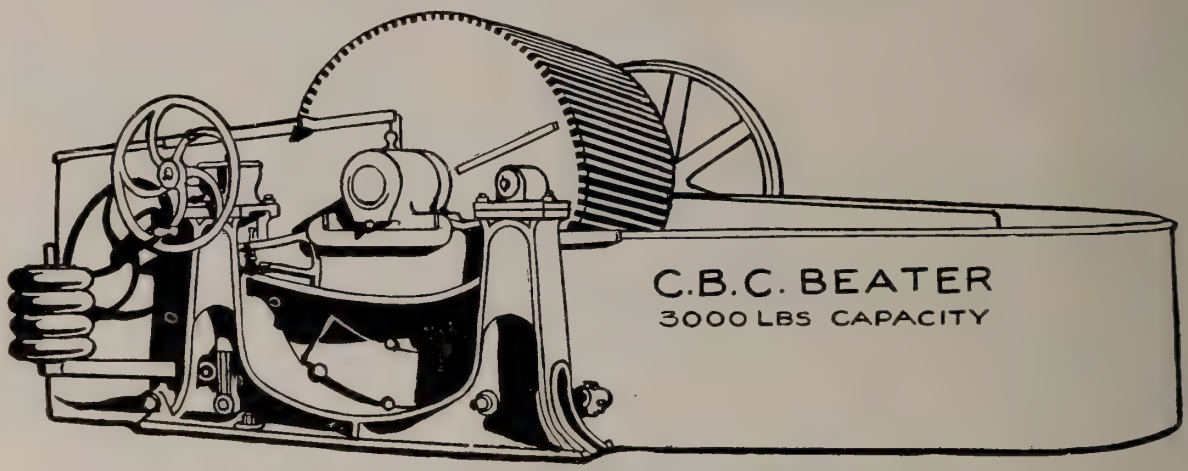
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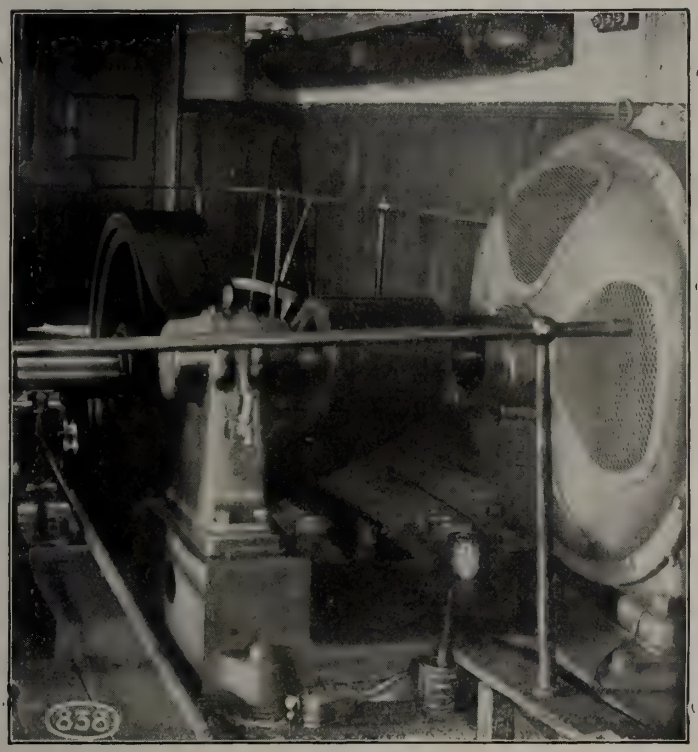
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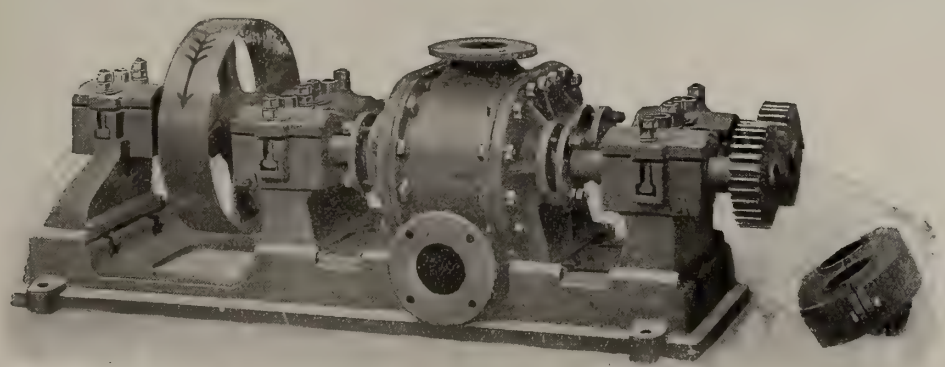
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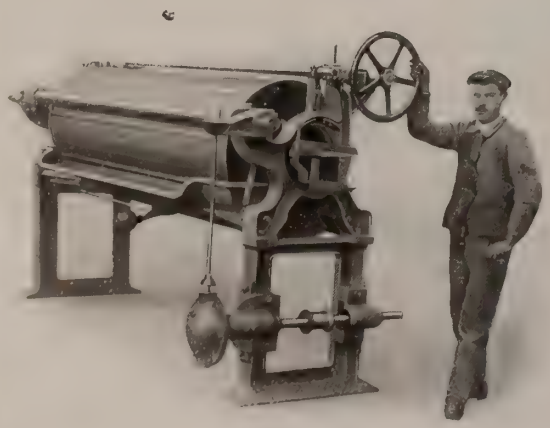
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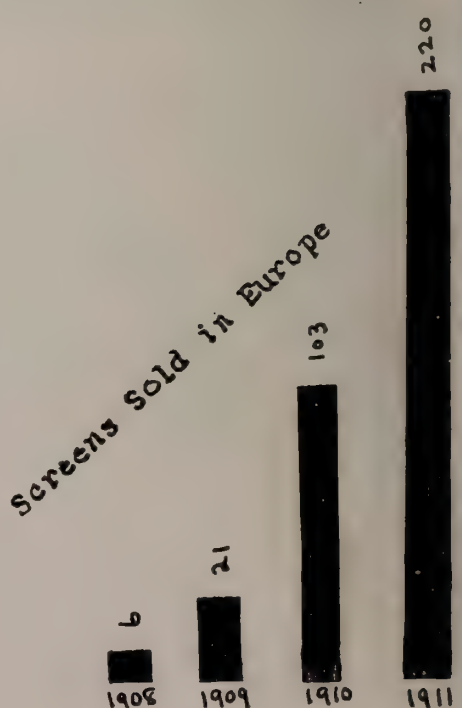
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VOL. XI. TORONTO, MARCH 1, 1913 No. 5

Notice of General Meeting

A number of prominent pulp and paper men will meet for luncheon at Room F, King Edward Hotel, Toronto, at 1 P.M. on Saturday, March 8th next, for the purpose of discussing the organization of a Pulp and Paper Association for the Dominion of Canada, at which your presence is requested. It is specially hoped that all branches of the industry will be represented, so that the proposed Association shall be as wide in its scope as possible.

ANNUAL CONVENTION, AMERICAN PAPER AND PULP ASSOCIATION

NEW YORK, FEB. 18, 19, 20

Last week was marked throughout the industry as the convention week of the above Association. The usual keen interest by all manufacturers in these meetings was even more marked this year, due chiefly to the discussion and fears over Canada's increasing share of American business.

Mr. Arthur C. Hastings, of the Cliff Paper Co., was re-elected president, and Chas. F. Moore, editor of "Paper," secretary. The former gentleman, who has often represented the paper interests before committees of Congress, lead the discussion of Canada's encroachment in their trade, and laid on the table of the convention an exhaustive report on that trade. This report dealt entirely with the effects of Section 2 of the Reciprocity Act, which reads as follows:

> Pulp of wood mechanically ground; pulp of wood, chemical, bleached, or unbleached; news print paper, and other paper, and paper board, manufactured from mechanical wood pulp or from chemical wood pulp, or of which such pulp is the component material of chief value, colored in the pulp, or not colored, and valued at not more than four cents per pound, not including printed or decorated wall paper, being the products of Canada, when imported therefrom directly into the United States, shall be admitted free of duty, on the condition precedent that no export duty, export license fee, or other export charge of any kind whatsoever (whether in the form of additional charge or license fee or otherwise), or any prohibition or restriction in any way of the exportation (whether by law, order, regulation, contractual relation, or otherwise, directly or indirectly), shall have been imposed upon such paper, board, or wood pulp, or the wood used in the manufacture of such paper, board, or wood pulp, or the wood pulp used in the manufacture of such paper or board.

In the discussion of this, the author said, in part:

"So extraordinary and complicated are many of the features of the law under which pulpwood, pulp and paper are now being brought into the United States from Canadian territory, that many well-informed people—among them some manufacturers of pulp and paper—appear to have more or less misapprehension in regard to the situation.

"It will be remembered, the people of Canada—at the polls—refused to ratify the international agreement. We were then left in the position of that portion of the law which was favorable to Canada being effective, while the portion which required Canadian concessions was left, and is yet, inoperative. The only pulpwood which could be purchased and brought into the United States by our domestic paper manufacturers was that which might be procured from what is known as 'freehold lands,' or such lands as the title to which had become vested in individual olders. Certainly not more than 10 per cent. of the available timber is grown on the latter class of lands.

"It was never contemplated, of course, even by the most ardent advocates of the bill, that any release of export restrictions would be limited to particular tracts of woodland, but it was naturally presumed that release when made at all, would certainly extend to all the Crown lands, included at least in one of the Canadian provinces.

"To the amazement of all Americans, announcement was sometime ago made that the export restrictions had been removed from that particular timber, the rights to which had been granted to the Powell River Company, this being located in British Columbia.

"Later, in the early part of January of this year, the Provincial Council of Quebec announced that it had likewise removed the export restrictions upon the pulpwood grown upon Crown lands in that Province, formerly ceded to four companies manufacturing paper, whose mills were located in Quebec, viz., Laurentide, Belgo-Canadian, Wayagamack and Price Bros., with an aggregate producing capacity of about 500 tons daily.

"The manifest and avowed purpose of these releases is to enable the Canadian manufacturer to send his product into the United States free from payment of any duty, contending that the provision of Section 2 entitles them to such free access, inasmuch as the export restriction no longer exists on the wood used in the manufacture of that paper.

"If the Canadian contention were to prevail, the effect would be to allow all Canadian paper, not exceeding 4c. per lb. valuation, at point of manufacture, to come into the United States free of duty; while, at the same time, the American manufacturer would not be permited to purchase any pulpwood grown on Crown lands; nor is he, under the present law, permitted to send a pound of paper into the Dominion without paying a tariff thereon.

"Fortunately, the Treasury Department at Washington did not acquiesce in the Canadian construction of our law, excepting so far as the operations of the Powell River Company are concerned. Instructions were given to the collectors of customs to continue the assessment of duties on pulp and paper made in Canada from Crown lands, released in the manner described above, and within the last few days that ruling has been approved by the President.

"It is hardly conceivable that our American authorities could stand for any such construction of Section 2, as is being put upon it by Canadian officials. But such,

indeed, is the invitation to constant international misunderstanding and confusion, there appears to be but one reasonable and practicable way to avoid it, viz., to get rid of Section 2, which, at best, has not an element of reciprocity in it, but is altogether favorable to the Canadian manufacturer and greatly to the disadvantage of the American paper industry."

There is among the American manufacturers, as this indicates, a wide-spread feeling of dissatisfaction at the results of this Act. Clamours at the doors of Congress seem, however, to be of little avail. A member of Congress addressing the Convention at the Banquet, said, "Set your houses in order," hinting that Underwood's committee have some radical changes in mind. He suggested that rather should the American paper maker seek assistance by agitating for lower tariffs in the machinery, wires, felts, and chemicals used in paper making. Thus we see the manufacturer is in the face of keener competition from our modern mills, which he must meet by more scientific methods in his mill. As yet many of our mills although model of equipment are gross examples of waste and squandering of natural resources. In this phase, the man to the south of us has a decided advantage, for it is much easier to put a well established mill on a good basis than one only in its infancy. It is in this direction that the American paper maker must seek his relief.

There is of course in any civilized country in general a sense of fair play which can be relied on to resist any extreme, and we cannot think the mills to the South will suffer to the extent they fear.

Another aspect must be weighed against this. If an industry such as we are discussing extends beyond the limits of the raw material or other resources available under the incentive of their higher tariffs, development based on such ephemeral conditions, or extended beyond the warrants of the resources, suffers, and the sense of fair play does not always bring relief to such.

Our Canadian mills in this have an admirable example which yet is not heeded, in our beginnings of proper development, but which will become more and more worthy of consideration as we progress.

We most sincerely regret the tendency among many in the United States to accuse the Quebec Government of double dealing in its recent actions. The claim that a secret contract was entered into is absolutely false. True, those lands in which restrictions were first removed do not export wood, and have no plans to, and it is also true this was a consideration with the Government. No secrecy, however, was made of this. Sir Lomer Gouin only a few days after lifting these restrictions stated in a public address that it was his policy to make the Province of Quebec the world's greatest news print centre.

It is not trickery to take advantage of a chance such as we see in the above Section 2. The clause respecting restrictions should never have been in the reciprocity agreement. It was a joker and an attempt to exploit Canada by the interests now so hard pressed. If the framers of that clause made a slip in neglecting to state specific areas, such as one province, over which the restrictions should be raised, they cannot blame us in taking advantage and profiting by their own attempt to exploit us.

The same men, who attempted to mete out such treatment to our resources, relying on the ability to bring pressure on our local governments, now cry out and dub Canada as a trickster, in putting herself in a position, by open and fair means, to profit by the American statue. True we are keen on selling our print across the line, but the price of squandering our raw material in such a lavish way, to build up the industries of others, is too high.

One upshot of the convention seems to have had a marked effect, that is the realization of the need in Canada of a similar pulp and paper convention. Haste the day when we shall have such an organization.

PROTECTION AGAINST FOREST FIRES.

Conservation of forest resources is all-important, whether it be in the form of regulations against wasteful cutting, or restrictions against the exportation of Canadian raw material for building up of foreign industries. But the form of conservation which is most important of all is a proper and sufficient degree of protection against fire, which may easily do more damage in a day or two than other kinds of waste in a year. The average value of the first products of Canadian forests probably approaches $100,000,000 annually, but one or two bad fires in a dry season can run this record fairly close. And the direct pecuniary loss involved in the loss of a few square miles of timber is not the only injury to the community. Soil is burned up and rainfall is affected, meaning future agricultural impoverishment; water powers are rendered irregular in flow, meaning serious loss to manufacturers.

It is not to be wondered at, therefore, that in practically every part of Canada and of the United States, public and Government interest is being taken in the question of better protection of the forests against fire. This interest is not yet so absorbing as it should be in view of the enormous stakes involved—ultimately perhaps the future of the country—but it is gratifying to see how yearly stronger it becomes.

As an illustration, the Ontario Government is introducing more stringent regulations in the form of an "Act to Preserve the Forests from Destruction by Fire." Under this, any part of Ontario may, by proclamation of the Lieutenant-Governor in Council be proclaimed as a "fire district" between the confines of which fires must not be started during certain periods, except for certain clearly specified purposes. In case of making land clearings, or in cooking, etc., rules are laid down of a precautionary character. The responsibility of the railroads is recognized and spark-preventive appliances ordered. Penalties are of course pro-

vided against the neglect of the rules laid down. Where Crown lands are under license, the Government map appoint such number of fire rangers as may be deemed necessary, the expense to be apportioned between public money and the holders of such timber licenses.

Under all forms of protection against fire the chief difficulty unfortunately consists not in making the regulations, but in seeing that they are carried out. It is easier to impose a penalty than to enforce its payment. For this, public ignorance and thoughtlessness are largely to blame. Education of the masses of the people, and particularly of the people who live in or pass through wooded districts is the only hope. It is gratifying to note that slowly, but surely, this desirable end is being attained.

To illustrate this point, the experience may be given of Massachusetts, one of the States most active in the protection of its woodlands against fire by rangers. A good system of rangers and of lookout stations is employed, but a large part of the benefit accruing from the system has come through the co-operation of the general public as explained by Mr. S. N. Spring, the State Warden, as follows:

"The efficiency of the service has depended largely upon the public spirit of the town fire wardens who have been appointed for this work, and faithfulness in carrying out their duties. In some towns lack of interest and support by the public have seriously impaired results.

"No one can to-day question the value of systematic fire protection work as carried out during the seven years following its inauguration in this State. With an expenditure of less than a cent an acre per year an immense amount of valuable woodland has been saved from destruction. Greater co-operation by the public is, however, necessary to secure better results in each town, both in fighting fires and in getting at the causes to prevent their occurrence.

The public is responsible for over two-thirds of our fires, chiefly through carelessness and negligence. Every citizen should know the laws and should use his influence with others to bring about their enforcement. Carefulness and obedience to law on the part of each individual citizen, especially in dry seasons, will reduce the number of fires to a minimum. Prompt co-operation and assistance by the public when fires occur will prevent any great areas being burned over with large accompanying losses."

PAPER-MAKING MATERIALS.

It is evident that more attention must be given in the future to maintaining sufficient supplies of materials to meet the legitimate demands of the paper-making industry. This is an agricultural and economic problem which may be met in several different ways, the essential consideration being that it be solved to the greatest advantage of the country at large. It is customary to suggest that other materials than those now generally employed must be used, and particularly that some new material or process must be discovered or that a crop must be especially grown for the purpose. There are, however, a number of ways in which the materials now best known may be made to satisfy still greater demands, some of the more important of which may properly be discussed here.

Thus, five tons of waste textiles would make four tons of the strongest, most durable paper. There is a sufficient quantity of waste textiles to supply all demands for fine paper for years to come, and probably such papers will continue to be made from these materials, as no others which can compete with rags in cost are now known.

Fully 80 per cent. of the paper now made annually in this country becomes waste material in three or four years. Of this, about 25 per cent is again used in the form of new paper cuttings and trimmings and old paper for making new.

A more general appreciation, particularly among the country people, of the market value of rags, old rope, and waste paper of all kinds would increase largely the supply of paper stock and add considerably to the income of the people.

One of the most striking points brought out is that the quality of any class is seldom as good as the materials and the technical skill of the maker can produce. The several processes of paper making frequently are not conducted in such a way as to produce the strongest, most durable, and best appearing papers of a given kind. This is particularly true of papers which should have strength or durability, many of which are overloaded with clay, which weakens them, or are not properly beaten and run to give them good formation and the maximum strength of the material. This is found especially in wrapping papers and boards whose value for practical purposes depends on their strength and pliability.

All classes of paper now made are almost invariably needlessly heavy and thick. The purpose for which paper is employed, whether it be for printing, writing or wrapping, can be as well accomplished in nearly all cases, both from the utilitarian and the aesthetic point of view, by lighter and thinner paper. The strength and quality are improved at the same time, and the consumption of paper reduced thereby from 15 to 50 per cent. Thus the employment of 60 and 80 pound book papers, or even of 50-pound paper, is a totally unjustified waste in most cases, as every purpose can be accomplished by 30 and 40 pound papers. Much lighter and thinner writing and wrapping papers can be employed in the vast majority of cases with quite as satisfactory results as are obtained from papers that weigh 80, 100 and 120 pounds per ream.

It has frequently been suggested that materials be produced for paper making just as any other farm crop is grown, and it is worth while to inquire into the necessity for doing this.

No consideration is given here to the large quantities of marsh and other wild grasses, of bagasse, and corn and cotton stalks, which are also available, but not as desirable technically as those mentioned, nor to the bast fibre of Malbon and other bast fibres which occur in large quantities. While it is true that not all of the above-mentioned materials could be acquired for paper making, owing, for example, to their greater value to those who produce them for other purposes, it is evident that there is no danger of the immediate exhaustion of such raw materials even on the present basis of production of paper.

The industrial conditions that have made wood the chief raw material will undoubtedly continue to encourage its extensive use for many years, so that the price of wood will largely fix the price of any competing material.

WASTES FOR PAPER MAKING MATERIAL.

The utilization of mill and forest waste, with the present methods of removing bark, rotten wood, and knots, for making any but low-grade colored papers or boards seems inpracticable. If all suitable material is used, as it should be, for making laths and other small articles, the waste from a mill would be too small both in size and quantity to be profitably handled as a paper material. There are, however, large quantities of wood left in the forest which is of sufficient size to be used advantageously by the methods now in vogue. While it is impossible to give an accurate estimate of the material thus available, it is probably safe to say that fully 25 per cent. of the tree which has been cut for lumber is still available for paper making and, when properly graded, offers no particular difficulty in treatment at the mill.

Straws and other grasses too, contain compound celluloses which exist both in the form of fibre and of nonfibrous cellular material, and yield from 30 to 50 per cent. of white paper. These substances are likely to contain much dirt, collected from the ground, which is difficult to remove; if any remains, it increases the cost of treatment and mars the quality of the paper. Cereal straws were generally employed for the cheaper papers before wood was used, and even now are used extensively for making papers and board. As has been said, the cost of making a good quality of paper from these materials, under ordinary conditions in this country, is greater than from wood, but they are suitable for making cheap wrapping papers and boards when the proximity of the mills to the raw material and increased yield compensate for somewhat greater original cost of raw material or greater cost of treatment.

In Canada many acres of flax are grown annually, practically all for the seed, while the straw is allowed to rot or is burned in the fields. One ton of this straw will yield about 400 pounds of fibre. Small quantities of straw are now being delivered to the tow mills at from $2.50 to $3.00 per ton, and doubtless practically all of it can be secured at $5.00 or $6.00 per ton. As the fibre is one of the best paper-making materials, it is, even at the highest mentioned price, a cheaper raw material for strong wrapping paper than old manila and hemp rope, and if it can be obtained free of the seed, which when present produce grease spots in the paper, the fibre will command even a higher price for fine white paper. Commercially, the presence of seed has been a difficulty in the utilization of the fibre for fine papers.

The cheapest known raw material for medium-grade paper which can be obtained in large quantities is wood. It is highly important to practise conservative methods in its use. Therefore, the great quantity of waste from the lumber industry should be utilized for paper making wherever possible. It is probable that such "new" materials are the cheapest available.

There are large quantities of cultivated and wild straws and grasses and of flax fibre available which can be used for paper making. Economic agricultural considerations indicate that the cultivated straws should only be thus employed when the woods and textile and paper wastes can no longer supply the demand or are too costly. Flax fibre, when it can not be put to more important uses, should be employed in paper making.

Finally, when all of these supplies are no longer adequate and when economic conditions are such as to justify such innovations, there are suitable quick-growing materials which may be produced primarily for paper making.

RESEARCHES IN CELLULOSE III.

The latest contribution to cellulose chemistry by Messrs. Cross & Bevan, the well-known chemists and writers of London, has just come out under the above name.

It deals with their work in cellulose 1905-1910 as their two former volumes, 1895-1900 and 1900-1905, under the names of Researches in Cellulose I. and II.

Not only does it give the results of their investigations, but also a personal and impressionistic view of the progress in the research field of cellulose for that period. The progress made in this field has been very marked, due to the application of physical methods to the investigation of cellulose, its derivatives, and its analogues of the colloidal carbohydrates.

The following contents give an idea of the value of the work:

General Review—Cellulose in Relation to Biological Science.

Cellulose—Normal Cellulose—Constitution.

Cellulose Esters—Acetate and Comparative Studies of Acetylation—Formyl Derivatives—Xanthogenic Esters.

Ligno—Celluloses—Reactions with Halogens—Constitution—Study of Autoxidation.

Technical Developments—Textile Industries: Bleaching—Paper making — Commercial Jute and "Heart Damage"—Special Industries—Artificial Fibres—Film Products—Applications of Cellulose Acetates.

Longmans, Green & Co., 39 Paternoster Row, London, 1912. Price 7s. 6d. net.

LAKE SUPERIOR PAPER COMPANY

By George F. Hardy.

Special to Pulp and Paper Magazine.

The complete new pulp and paper plant of the Lake Superior Paper Company, Limited, situated at Sault Ste Marie, Ont., Canada, is said to be one of the most modern and thoroughly equipped plants of its kind in operation to-day. The plant is located on the north side of the Falls of the St. Mary's River, just north of the Canadian lock. The building walls are of native red sand stone, excepting a few walls invisible from the main thoroughfares of the town, which are of brick. The floors are practically all of concrete excepting the finishing room, and the roofs throughout are of plank on steel trusses, excepting the boiler house and train shed roofs, which are of concrete.



MACHINE ROOM.—Lake Superior Paper Co.

Power.

The water power for pulp grinding is supplied by the Lake Superior Power Company through a canal about 2,400 feet long, which carries the water right up to the water wheels. It amounts to about 12,000 h. p. under 18 foot head. Electric power is also supplied by the Lake Superior Power Company amounting to 4,000 h. p. All of the machinery in the mill, excepting the grinders and paper machines, is driven by electric motors. The current is of two kinds, alternating current, three phase, 2,200 volts for the larger motors and direct current, 500 volts for the smaller motors. The steam power plant consists of eight 500 h. p. Babcock & Wilcox boilers, imported from England, with automatic stokers.

Machine Room.

In the machine room are four high-speed Fourdrinier news machines. No. 1 and No. 2 machines are 156 in. wide, made and installed by the Black-Clawson Company of Hamilton, Ohio. No. 3 and No. 4 machines, 198 in. and 186 in., respectively, were made and installed by the Pusey & Jones Company of Wilmington, Del. Each machine is driven by a Hamilton-Corliss twin engine. Large hand-operated cranes, made by the Dominion Bridge Company of Montreal, Canada, are over the machines for making repairs quickly. The diaphragm screens were furnished by the Sandy Hill Iron & Brass Works; the triplex stock and suction pumps for wires and felts by the Coulds Manufacturing Company; the roll grinder and paper machine calenders by the Farrel Foundry and Machine

Company, and miscellaneous centrifugal stock and water pumps by the Lawrence Pump & Engine Company.

The finishing room is a building 270 feet by 126 feet, which gives an ample floor space for finishing and storing the paper. This room is well lighted by windows and skylights.

In the beater room the Jordan engines are made—two by the Black-Clawson Company and two by E. D. Jones & Sons Company. They are all driven by direct connected motors. The beaters, as well as all stuff chest agitators, were furnished by E. D. Jones & Sons Co., of Pittsfield, Mass. In this room also are the ground wood centrifugal screens, supplied by Waterous Engine Works Co., of Brantford, Ont.; also the ten ground wood deckers, with cylinder molds 40 in. x 96 in., four pneumatic save-alls, and four pneumatic sulphite thickeners, which thicken pulp for the beaters, doing away with taking same off from the wet machines in laps; all in battery form, having one common supply and drive for each machine, built by the Sherbrooke Machinery Co., Sherbrooke, Que.

Grinding Room.

The grinder room has twenty-four grinders with stone 54 in x 27 in., manufactured by the Jencks Machine Company. These are arranged in pairs, each pair direct connected to a five-wheel turbine unit. Each of these units is rated at 1,000 h. p., and they were all furnished and installed by the Dayton Globe & Iron Works Co., of Dayton, Ohio.

The sulphite mill was built some ten or twelve years ago by the Sault Ste Marie Pulp & Paper Company, but in connection with the new paper mill it has been entirely overhauled and the wet machine and screen rooms practically rebuilt, as the walls are the only remaining parts of the original buildings. The pulp is rough, screened by Baker & Shevlin Co., knotters, and properly screened by vertical centrifugal screens built by the Baker & Shevlin Company.

Arrangements are made for handling logs directly from cars to a seven-saw slasher in the wood room, or from the lake to the seven-saw slasher located nearly half a mile west of the plant. Between the plant and the slasher building is an ample space for storing pulp wood blocks. Blocks are conveyed from the slasher building to the wood room in a water trough and equipment has been installed for piling barked blocks by an inclined steel structure supporting a conveyor. The block piler and slashers were built by the Waterous Engine Works Company, of Brantford, Ont., and in the barker room half of the barkers were furnished by the Green Bay Barker Co., of Green Bay, Wisconsin, and the rest by the Witham Company, of Hoosick Falls, N.Y. The chippers and crushers were made by the Carthage Machine Company, of Carthage, N.Y. The shaking chip screen by Ryther & Pringle Co., of Carthage, N.Y.

The 198 in. paper machine is the widest in the world now running and the Fourdrinier wire for it was made by the Lindsay Wire Weaving Company, of Collingwood Station, Ohio.



DRY-END PAPER MACHINES.—Lake Superior Paper Co.

The ground wood mill has a daily capacity of 160 tons; the sulphite pulp mill a daily capacity of 70 tons and the paper mill, which will largely consume the products of the pulp mills, has a capacity of 200 tons or newspaper per day.

The H. E. Talbott Company, of Dayton, Ohio, was the general contractor, and in addition to building the plant, it also erected all of the piping and electric wiring for lights and power throughout the mills. Actual construction was commenced about August 1, 1911, and the first two machines were started up in the last week of June. 1912.

Taking into consideration the size of the mills and the gerat amount of work done in remodelling the grinder room, the time consumed in the erection of this plant was remarkably short. The buildings were all completed when the first two machines were started. The remaining two machines were started, one just before and the other immediately after the first of January, 1913.

Mr. George F. Hardy, of 309 Broadway, New York City, was the designing engineer and Mr. Howard S. Taylor, his representative, was the resident engineer in charge of the construction and equipment of the mill. The President of the Company is Mr. H. E. Talbot and the Vice-President and General Manager is Mr. George H. Mead.

It is estimated that the net profit on the year's output will amount to over $700,000, which is sufficient to meet the interest on the 6 per cent. bonds of the company two and a half times.



FINISHING ROOM.—Lake Superior Paper Co.

CAUSES AND REMEDIES OF CREASES.

Creases are made in paper during manufacture if it is stretched insufficiently or unequally over the width of web, between two machine parts, or when it itself is not of uniform thickness. All creases begin, as regards the direction in which the web travels, inwardly, and run towards the edges. Hence creases caused by the calender must cross those made in the Fourdrinier, provided that the paper is not rolled up between the Fourdrinier and the calender. Creases from the couch-roll appear in the look-through as dark, oblique stripes. The felt may cause creases by pressing more at the middle than at the edges. The remedies are obviously the removal of the causes. One cause of creases has yet to be mentioned. A new wet press felt, or an old one which has been removed and replaced inside out, often encloses air between itself and the web, whereby a blister is formed, and creases are the natural result. If the felt is thoroughly soaked and pressed before use, this difficulty will disappear, whether it is a new one about to be put on, or an old one which has been turned. Folds parallel to the run of the web, whether at the edges or in the middle, are generally due to excessive or deficient tension, or by the accumulation of dirt on the middle of the guiding rollers. They can usually be remedied by running strips of paper laid on the edges of the web, so that they accompany the web through the dry-end cylinders. Drying creases proceed mostly from differences in the amount of moisture in different parts of the web. It is necessary to see that the web touches the cylinders throughout before it is covered with the drying felt. In calendering, if the rollers are as they should be, and the pull on the paper is steady and free from jerks, any creases formed must be referred to unlevel drying. In drying paper, the edges being nearest the outer air tend to dry more quickly than the middle of the web, and this tendency must be provided for—"Vercin der Zellstoff-u Papier-Chemiker."

HEAT AND POWER TRANSMISSION

By LEO. SCHLICK, M.E.

II.

Before I continue my article of the 15th of January, I beg to correct the following errors occured in printing. Read: Economizers. The flue gases leave the boiler with 250 to 300 degrees C. and 200 degrees of this heat can be recovered, etc., then later on 90°—30°=60° also as regards to example on the calculation of "efficiency of boiler plants," C=calories of the coal=7100 in our case; and the saturated steam requires 624.6 calories, the superheated 688 calories. It can be easily noted how little heat will be used, to generate high grade steam and how much profit can be obtained by its use.

Softening and Filtration of Boiler Feed Water.

Though many manufacturing plants have no little difficulty in sizing the paper and with scale in the boiler only very little attention is paid to this important arrangement.

Most plants are fed with water, simply cleaned by means of a sieving device, plane or rotary, only the floating impurities being screened out.

Where the river water is clean, and only a small ratio of organic matter is suspended in it, it may not be absolutely necessary to clean and prepare the water, depending on the needs.

I have been connected with a paper mill where 45 tons of writing paper were produced per 24 hours, and if precautions had not been taken to better the water, the mill would have been forced to shut down on account of the impossibility of equal sizing. The only trouble were the organic matters, contained in the water, not reckoned as iron and hardness.

The river water, in washing out banks centuries old of decayed substances, etc., absorbs considerable quantities of them. Water is not fitted for raising steam when it contains more than five parts per 100,000 of free nitric or sulphuric acid, causing corrosions in the whole steamline, and corrections. There should not be more than 75 to 85 parts of total solid residue per 100,000. The water should also be tested for iron, chlorine and lime.

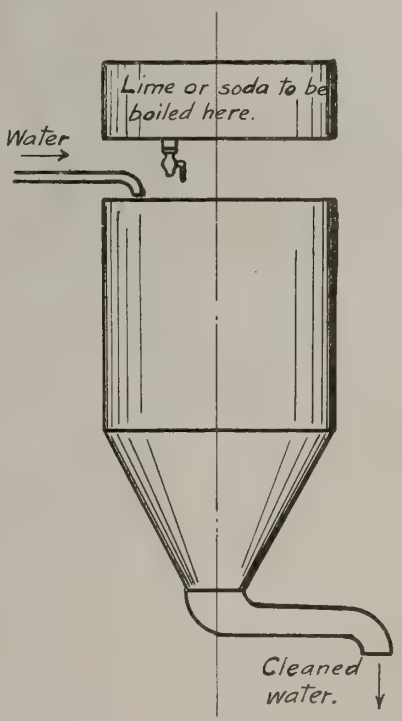
The adding of substances directly to the feed water to prevent scale should be avoided, because there is absolutely no control of the quantity of chemicals employed, or the proportions. There are a lot of "secret" additions to the feedwater largely in use, where there is no need of a systematic chemical control. The chemist is to the paper mill material what the engineer is to the machinery—a surgeon, and in order to save a couple of thousand dollars, employing no chemist, the plant runs loss, or is ruined in a few years.

Many firemen are proud of their "secret" of adding childishly all kinds of substances to the feed water or directly into the boiler. Of course the scale disappears but the shells get corroded where the water is circulating rapidly and many terrible explosions have occurred through this "scientific" method of water treatment.

The writer recently found as engineer in charge of a 10,000 horse power steam plant, corrosions in a combined boiler system. The water was carefully analyzed twice daily, keeping only a very thin film of scale, in order not to do too much. All impurities were blown off and the water before entering the boilers was filtered and softened in sand filters. This boiler type had other faults, causing the corrosions, but the writer found that events may happen in every mill, and if there is no careful inspection serious accidents and inspected, inside and outside, before and after cleaning. Of course there is no clean job. Let us return to the purification of the water, and study the methods.

If water is to be used for the manufacture of ground wood pulp a simple sieving device may be sufficient. loss of money may occur. Boilers should be regularly I say may be, very often it is not, and the buyers of ground wood pulp complain that the pulp gets a green and blue, smelling coating. Here the water has to be chemically cleaned. Water used in the manufacture of writing and medium printing papers, requiring a suitable tub sizing which doesn't contain large quantities of magnesia, lime, iron, chlorine, it has to be cleaned chemically also.

The writer will deal later in a special article with the sizing of paper, when he will consider the minimum quantities of sulphate of alumina, the minimum quantities of rosin in connection with casein, with hard and soft water. The most modern way of purifying water containing large quantities of organic matters, iron and magnesia, for feed water as well manufacturing water is the following, for 20 years in operation in a paper mill.



Prepare in a lead lined wooden tank (similar in construction to the causticising tanks in sulphate mills) a solution of warm water and sulphate of alumina, adding eventually if the organic matters are too many, hydrochloric acid (in a ratio of 50 lbs. per 10 tons ordinary paper). Pump this solution to the gate where the water flows in a long excavated basin (without any lining), allowing the water to flow with a velocity as small as possible.

Most of the organic matters in here settle down and this settling down can be noticed on a very sunny

day. The basin may be 15 to 25 feet deep, 70 to 100 yards long, by 25 yards wide — sufficient for 50 tons daily output of paper. It has to be cleaned every year and pumped out before the cleaning with a pulsometer. The water then passes through a wooden gate and is filtered by means of rotary cylinder filters. They are provided with chambers, formed by sieves, filled with gravel, coarse and fine sand respectively. The water, after passing this filter is allowed to flow to a basin, the reservoir of the mill. This water, if properly cleaned, and if its cleaning is controlled by a chemist or a workman trained by a chemist, is absolutely fitted for the manufacture of writing paper and secures the smallest waste of loading material and consumption of rosin, starch, etc. But this water is not fitted right away to serve for boiler purposes. It has lost iron and its organic matters, but it may contain enough magnesia and lime to cause scale and corrosion, the latter on account of the acids with which it has been purified.

Every modern steam plant uses the condensed water of the paper and pulp dryers, as well as tubular feed water heaters (about which we will speak later on). The quantities of hot water reclaimed in this way are considerable. Let this water pass with a temperature of 90°C., through a suitable oil separator, then the economizer, and mix the hot water having about a temperature of 125°C. with the additional cold water, and clean this mixture by means of soda or soda and lime. Soda or soda and lime have to be boiled with steam and added in continuously flowing quantities to be determined by Clark's soap test. The cleaning of the water is obtained by means of a vertical cylinder with a cone shape bottom, and provided with a sand filter. The mixture of lime and soda or soda respectively has to be boiled about every two days, taking one-half hour, and the small sand filter has to be shut down and washed twice or three times a week by means of steam.

The illustration explains this system. Water is allowed to flow from the cleaner into the reservoir of the boiler plant, note that hot water has to flow under pressure into the pumps. Feed water piping for boiler plants ought to be designed as endless ring system and is to be made from copper pipes. If the water cleaner is controlled twice a day the scale is not only eliminated, but every ecid, etc., is neutralized, and a long life is secured to the boiler plant.

The ratio of heat transmission of a scale covered plate to a clean one is

$$\frac{T^1}{T} = \frac{K}{K_1} = \frac{1}{\frac{1 + d \times K}{L}}$$

T^1=amount of heat transmitted through a scaled plate.
T=amount of heat transmitted through a clean plate.
d=thickness of scale in meters, say 0.003.
L=heat conduction co-efficient of scale.
K=co-efficient of heat convection say 20.

$$\frac{T^1}{T} = \frac{1}{\frac{1 + 0.003 \times 20}{1}} = 94\%.$$

That means, a plate covered with only a scale of 3 mm. thickness transmits 94% of the heat of a clean plate. The other 6% is swallowed by the coat and lost. If coal consumption is say 50 tons daily, three tons, equal to 6% are absorbed by the scale. The coal costs, say $3.00 per ton f.o.b. mill, then you lose 3×3×300= $2,700.00 a year on account of scale.

The co-efficient K in our example is extremely low, and depends on the velocity of the circulating water in the boilers. K is higher in water tub boilers than in the common type.

for K=50

$$\frac{T^1}{T} = \frac{1}{\frac{1 + 0.003 \times 50}{1}} = 87\%.$$

loss 13 per cent.

The above mentioned water purification for manufacturing water as well as for feed water is of highest value and most profitable, where all the white water and save all water isused again and again in the manufacture, and where all the condensed water, etc., is reused.

Considering the fact that only a small amount of heat contained in the coal is converted into power, we will study further the ways more waste heat may be reclaimed in

Tubular Feed Water Heaters.

These tubular feedwater heaters are to be supplied with steam from the steam pumps in the boiler house, and are also to be used in a successful way in placing them in the steamline between condenser and low pressure cylinder.

They are also successfully used in utilizing the exhaust steam heat of steam turbines and are placed between turbines and condensers. The feed water of the boilers, entering the feed water heaters with 30 degrees C. is raised to 85 to 90 degrees C. Example:

Exhaust steam pressure, say 3kg absolute, equal to about 30 lbs. gauge pressure, according to 132.8 degrees C. temperature.

Drop of temperature 10%. Steam enters the heater with T=119.5 degree C., Temperature of water entering the heater T_2=say 15 degrees C., and has to be raised to 80 degrees C. Ta—te—85—15=70 degrees C.

The steam leaves the heater with say T_2=90 degrees C.; co-efficient of conversion is say 800.

The steam pressure of the boiler plant is say 12 atmospheres equal to about 180 lbs. gauge pressure.

To develop 1 kg of steam of 180 lbs. gauge pressure from 1 kg of feedwater of 15 degrees C.=649.6 calories are required and the saving of the feedwater heater amounts to

$$E = \frac{70 \times 100}{649.6} = 13.9\% \text{ of coal.}$$

(To be Concluded)

ANNUALS CONSUME PRINT.

"The Chicago newspapers in their annual trade review issues helped along the News Print mills considerably," remarked a mill man. "The Tribune and the Record-Herald ran 60 pages—that is, 20 extra carloads —and I believe the Examiner and the Inter-Ocean (all morning issues) did the same, making a total of 40 extra carloads. Add to this the morning issues of the German and other foreign language publications and those of the afternoon papers, and I figure the total will reach 90 extra carloads of News Print."

JAPANESE LEATHER PAPERS

By Raleigh Raines.

Special to Pulp and Paper Magazine.

The papers employed by the common people of Japan are immeasurably more varied than with us. They form one of the important economies in the life of the peasant, and it is such ingenious uses of plant material as this employment of papers made from the bark of a shrub that renders it possible for 42,000,000 Japanese to exist on the production of a cultivated area about one-third the size of the State of Illinois. We are indebted to the Japanese for many innovations, such as paper napkins, umbrellas, and lanterns, which has taught us new uses for paper, though the elsson has not yet been fully learned. There are many uses to which paper is made to serve the daily life of the Japanese, but perhaps the most remarkable of all the papers which find a common use in the Japanese household are the leather papers of which tobacco pouches and pipe cases are made, though there are many other uses to which this unique paper is made to serve. The leather papers are almost as tough as French kid, so translucent that one can nearly see through them, and as pliable and soft as calfskin. These tobacco pouches quite change one's notions of the characteristics of paper, for the material of which they are made is as thick as cardboard, but at the same time as flexible as kid. Even woven fabrics, of which the warp is paper and the woof cotton, are manufactured, and these find a place in the Japenese household, while the use of paper napkins, and handkerchiefs, umbrellas, and lanterns, is as much a part of the home life in Japan as the use of tin articles is in other countries. The country is rich in the possession of these conveniences, any one of which would be an addition to the comfort of a European peasant or an American farmer. But the reason for the remarkable use of paper articles does not lie wholly in the absence of cheap skins, though it is true that few domesticated leather producing animals exist in Japan. It is the quality of the papers themselves which makes them suitable to these various purposes, wherein they differ from the papers made of wood fibres instead of bast. In strong contrast with the papers of the Occident, are these bast papers, which are made from the inner bark of shrubs or small trees, while the papers of Europe and America are either from wood pulp, the macerated stems of wild grasses, or the cotton and linen rags of the refuse heap. After we have learned the source from which the linen and cotton rags are obtained it may not be a very pleasant thought to know that the brilliant white writing paper which your hand rests upon may have been contaminated with all the germs from some person whose garment it was before it passed through all of the stages of decay until it was saved by a ragpicker perhaps from the gutter of some Egyptian town, for it is a fact that large quantities of rags are imported every year from Egypt and other foreign countries. Our best papers are made from these rags, and the cheaper papers from wood pulp. The best papers are therefore a creation of the Orient and are more nearly related to the South Sea Island tapa than to any of our products. To the fact that they are made from bark they owe their peculiar character, and are as a rule softer, silkier, tougher, and lighter than our papers. If wet they lose their strength, like tissue paper, but on drying regain it. They are usually absorbent, and for this reason were considered as very valuable in surgery. As writing papers they are usually designed for brush work, and as a rule are not suited for penwork unless treated with a dressing of alum, as otherwise the fibres are continually being caught in the pen. Of the nine plants from which Japanese papers are made, there are two which furnish the majority of the fibres from which the remarkable leather papers are manufactured. One is the broussonetia or paper mulberry, and the other, edgeworthia papyrifera, the latter furnishing the pulp for the mitsumata paper, of which large quantities are exported to America and European countries every year, designed primarily for use as legal documents, diplomas, deeds, bonds, etc. Leather paper or "Tsubeya" is a most peculiar looking substance. It resembles oilcloth, but has a texture more resembling that of fine leather, except that it is more or less translucent, something like oiled pigskin. In the Province of Ise, Japan, are noted manufacturers of tobacco pouches who use only this leather paper in their maufacture, and the variety of styles in which they make their papers is remarkable. Yamada, where the most noted maker Ikeba has his shop, is a favorite place for pilgrims, and for many generations Ikeba and others have sold their paper tobacco pouches until it has become a fashion for every pilgrim to bring back from his pilgrimage to Yamada a paper pouch as a souvenir. Some of these leather papers are smooth and almost transparent; others are rough and stamped with pretty patterns, a host of different colors being used in their printing. They are in character a kind of wrinkled oiled cardboard, and the process of their manufacture is a tedious though comparatively simple one. A thick, weak cardboard called "Onagashi" paper, which is manufactured of bark fibre of the two shrubs mentioned in one of the interior towns near Gifu, is imported into Yamada in large quantities. Before processing it is soft and tough, but will break like any thin cardboard. To transform it the sheets are moistened and then wrapped around a small round stick about the size of an ordinary broom handle. Several sheets are wrapped at a time, separated from each other by special dry papers which have been painted with persimmon juice to tan them, and the roll of these papers is finally wrapped with a cloth and then tied. This roll, out of both ends of which the stick protrudes, is placed under a long lever, one end of the stick being stuck through a hole in the lever and the other lodged in a hole in the floor. The workman then sits on the long end of the lever and teeters until the roll of papers, which was originally about 18 inches long, is reduced to not more than 12 inches in length. He then removes the roll, unwinds it, spreads out the papers, again arranges the dry sheets and prepares another roll for the lever, inserting the same papers in another position. Eight times he subjects the papers to this wrinkling process, and each time they become smaller, thicker, and more pliable until, after the last wrinkling, the cardboard is as soft and limp as a bit of muslin. Once through the wrinkler, the paper is given a coating of oil made from the seed of a labiate (perilla ocymoides, a mint-like plant) and then hung out to dry. For over a hundred days it is hung in the open air to allow the oil to harden, and even two hundred days are sometimes required in order to finish this part of the process. After being once dried out the piece of wrinkled oil paper can be treated in almost any way

—shaved or scraped with a sharp knife, stamped or beaten with dies or patterns, or given a coat of laquer varnish as is done when certain kinds of uses are to be made of the paper. If colored papers are required, the pigments are applied before the oiling process. Although these papers are largely used for tobacco and other pouches, there are other uses to which they may and are made to serve, such as book covers, portfolios, table covers, etc., and should they ever become available to the common people of this or other countries there are many other new and important applications for them which could and would be found. A similar form of these leather papers is the Japanese handmade wall paper, which has a large and increasing export trade. There are large factories near Tokyo which turn out the most beautiful designs for wall and ceiling decoration. These wall papers are wrinkled in the way described, though probably not so finely, and then stamped and modelled by hand into the most artistic and pleasing designs. The extent of the leather paper industry is not very great, though it is increasing annually, but small as it is over 200,000 paper pouches are made annually by one firm alone in Yamada, and about $15,000 worth of business is claimed to be done by this same firm in leather paper pouches annually. Any plant from which a set of papers can be produced widely different from those already used, is in America and Europe, worthy of consideration for cultivation, and if the processes of manufacture can make from it better, stronger envelopes, finer and lighter wrapping paper, more suitable toilet papers, or a cheap and useful substitute for leather, the cultivation of the plant may prove decidedly profitable to those interested in the production of paper materials. Their oiled papers are another important element in the everyday life of the Japaneses, and are astonishingly cheap and durable. It is tough and pliable, as impervious as a tarpaulin, and as light as gossamer. The "rikisha" coolies in the large cities wear rain mantles of this oiled paper, which costs less than 18 cents and last for a year or more with constant use. An oiled tissue paper, which is as tough as writing paper, can be had at the stationer's for wrapping delicate articles. Every farmer has a stock of wrapping paper which has been in use for several years and seems as strong and flexible as ever. It has been tanned with fermented juice of green persimmons and made into "shibugami," which is more impervious to moisture than ordinary paper and much tougher. These papers are all made from bast, the inner bark of the mitsumata and paper mulberry furnishing the largest proportion of the material. The mitsumata plant is cultivated on the hillsides, and when about three years old is cut down, the bark stripped, and made into pulp largely by hand, and later the sheets are converted into the leather papers, oiled papers, and other kinds of papers for the export trade, forming what are commonly known as Japanese papers of commerce and trade. As the demands for the various Japanese papers are increasing yearly as their qualities are becoming more and more to be appreciated, the problem of furnishing an additional supply of the pulp is of course concerning the Japanese paper manufacturer, dealer, and exporter alike.

Construction will commence at once on the new mill of the Finch, Pruyn & Co. plant at Delotbiniere Station on the I.C.R. on Henri River, Quebec. Machinery is now being purchased by the head office at Glen's Falls, N.Y.

Ottawa Notes.

Special to Pulp and Paper Magazine.

Ottawa, February 26, 1913.

Among the buildings burned in the disastrous fire which visited Elk Lake last week and caused the loss of four lives was an office building owned by Mr. J. R. Booth.

Mr. J. R. Booth has lost his case against the Crown concerning the renewal of his license to cut timber and pulpwood on Indian Reserve No. 10 in the District of Nipissing. The original license was obtained by Mr. Booth in 1889 and was renewed from time to time till 1909, when it was refused, the claim being made that the land was wanted for settlement purposes. The land has since been advertised for sale. Mr. Booth took the case to the Court of the Exchequer, but judgment was last week delivered against his contention. There are 108 square miles in the reserve in question.

The two feet of snow which fell last week, followed by cold weather, have put the pulpwood industry on a much better basis. There is plenty of snow now in the woods to allow of the making of roads and to furnish a head of water in the spring. The pulp wood cut this year, however, will in all probability, according to lumbermen, be some 25 per cent. smaller than last year unless winter is much extended. The cut of other timber is estimated at about 50 per cent. less for 1913, but on account of the splendid demand for pulp wood efforts will be made to cut as much as possible.

Mr. M. J. O'Brien, the Renfrew millionaire who proposes to build a pulp mill at Haileybury, Ont., is now having plans prepared for the structure, which will be of reinforced concrete construction and will have foundations of concrete.—"Mac."

Quebec Forestry School.

The Quebec Forestry School is to have a new home. Up to the present time it has been housed in Laval, but the number attending the school has grown to such proportions that the Government has decided to build a school for themselves at a cost of some $50,000. The school has only been established for a very few years, but the demand for its graduates from pulp, paper and lumber companies and from the Canadian Pacific Railway Company is so great, that the graduates have no difficulty in securing employment. Mr. Menier, the Chocolate King, has applied for a number of students to go to the Island of Anticosti next summer.

Frank M. Williams, a well-known consulting chemist of this city, who in the past has done much chemical work for pulp and paper companies all over the country, delivered an address before the Society of Chemical Industries of Queen's University, Kingston, Ont., Friday, Feb. 28, in connection with the Engineering Society of the same university. Many large pulp and paper companies of Canada hold membership in the two societies and were present at the meeting addressed by Mr. Williams. The subject was "The Manufacture of Sulphite Pulp." Mr. Williams presented his subject from a practical as well as a scientific point of view and told of many methods whereby the manufacturers of sulphite pulp can increase the efficiency of their plants.

PREPARATION AND USE OF CASEIN

Specially Translated for Pulp and Paper Magazine.

Although casein in the form of cheese has been used as a food from time immemorial its utilization for industrial purposes is a quite recent development. A short account of this new industry may, therefore, prove interesting, as little has been written upon the subject, and casein products of the greatest industrial value have within the last few years been placed upon the market.

The first firm to manufacture technical casein in Europe, and who performed most of the pioneering work in connection with this new industry, was a limited liability company known as "Casein Limited." founded by Mr. E. P. Carpenter. Owing to their patents, the large scale on which they work, and the highly skilled chemical control of the processes, this firm still leads the British market, and also exports large quantities of casein abroad. The firm consumes about 30,000 gallons of skim milk daily in the summer months, representing about four tons of casein daily. Their factories are situated at Tipperary, in Ireland

The export of casein from the United Kingdom was £21,000 in 1910, and the import—principally from South America—was £50,000. The United States imported in 1910 about 1,700 tons of total value $304,000. in every case the main market is the home market.

The starting point of the industry is skim milk—formerly used for feeding pigs—which is milk from which the cream and fat has been machine-separated and used for butter-making. An average skim milk contains 3 per cent. casein, 0.4 per cent. milk albumin, 0.15 per cent. fat, 4.7 per cent. milk sugar, and 0.7 per cent. mineral matter. The casein is precipitated by various acids such as sulphuric, hydrochloric, acetic, lactic, and sulphurous (casein for different purposes is precipitated with different acids), washed, freed from traces of fat, and dried. The mother liquors and wash waters are worked for the milk sugar and milk albumin by partial neutralization, followed by low temperature concentration in vacuo and crystallization. The albumin may be separated by steaming, when it coagulates and separates on the surface of the sugar syrup. It is pressed to cakes and sold as a constituent of cattle foods. It is now more usually separated in a soluble form by a complicated and costly process and sold as a component for invalid foods, under the names "Lactalbumin," "Milk Albumin," etc. The refined milk sugar fetches a very good price, being used for children's foods, and for adding to various beers and stouts. The sugar, not being fermentable by ordinary yeast, may be added to the wort and remains in the finished stout to increase its "extract value."

Casein is largely used for sizing paper. It is dissolved in alkaline solutions, and mixed into the paper pulp, when it forms an excellent binding agent for filling matter and pigments. The process is especially useful when the paper pulp has to be moulded or pressed into relief forms, as the casein size is very resistant to heat or moisture. When employed in certain special surfacing processes it produces extremely beautiful art papers. Some of the very best protographic papers are casein sized, the papers being extremely resistant to heat and moisture, and thus will keep in the tropics. More usually the casein solution merely supplements ordinary engine sizing. The leather and textile industries also employ casein for "dressing" and "finishing" purposes.

Next in importance to its use as a "sizing agent" comes its use as a cold glue. Excellent glues are made merely by stirring up casein with distilled water and a little sodium bicarbonate, sometimes with the addition of shellac. In the woodworking trade casein glues threaten to displace ordinary gelatin glues because casein glues can be applied cold (so that all the trouble of melting the glue is avoided), can be made waterproof, and by their use certain delicate effects are attainable in veneering work which are impossible with gelatin glue, since the latter must be applied hot, and is not waterproof. Several American firms are now producing these glues in large quantities.

A great impetus to the casein industry has been given within the last few years by the remarkable discovery that when treated with certain chemicals casein is converted into extremely tough, hard substances like bone or ivory, which can be kneaded and moulded when hot, and when cold can be polished and worked. The best known of these products is galalith, which is made by treating casein with formaldehyde. It forms a tough white product, which can be colored or marbled when hot by stirring in dyes, soot, etc. It is now used for making piano keys, backs of brushes, imitation ivory articles, and especially as an insulating medium for electrical fittings.

Being non-inflammable, it is used as a total or partial substitute for celluloid, but has the disadvantage that it cannot be produced in very thin transparent sheets.

Similar substances are produced by adding to a caustic soda solution of casein various chemicals, such as sulphur, water glass, lime, sand, zinc and lead hydroxides, wood meal, cork dust, and so on. Such compositions are used for producing mouldings for picture frames, friezes, fancy articles, and toys. It will be remembered that plumbers have for years used a cement of red or white lead and cheese.

Attempts have even been made to produce artificial silk fibres from casein, either alone or mixed with other products, and much secret research is going on with this object.

Another development of the casein industry is its use in the manufacture of paints. It has long been known that the addition of casein to limewashes increases their durability, owing to the casein combining with the lime to form agglutinant compounds, which harden in the air to an insoluble cement. Many of the "Washable Distempers" now on the market have casein glue as a base. In the United States an extensive sale of "Casein Paints" takes place—these paints consisting of casein powder mixed with lime and coloring matters, and are sold in closed tins. They are very cheap and stable, but the lids of the tins must be kept on, otherwise the paint spoils. These paints have now a considerable sale in this country.

Casein is now being used for fining wines, since it has the advantage over gelatine that it is completely precipitated by the natural acidity of the wines, nothing remaining as a contaminating agent.

A considerable export trade to wine-growing countries is now done.

It is also used as a constituent of boot polishes, leather polishes, etc.

Last, but not least, a few words must be said on casein foods. Although a much smaller amount is consumed in their manufacture than in some of the tech-

nical applications, above described, yet the trade is an important and growing one.

The great medicinal value of casein arises from its high phosphorus and nitrogen content (P= 0.8 N= 15.7), so that when mixed with milk albumin, lecithin (a compound of choline, $CH_2OH \cdot CH_2N(CH_3)_2 OH$, glycerol, phosphoric and various fatty acids, which is made technically from yolk of eggs, and absorbed in wheat protein, alkaline salts of glycerol, phosphoric acids, $C_3H_5 (OH)_2O \cdot PO(OH)_2$, as well as iron organic salts, a variety of nitrogenous phosphorus-rich and mineral rich brain and nerve foods are produced, which act in a most remarkable way in certain nervous disorders. Very many of these foods are now on the market, the most recent, and perhaps the most successful, being "Visem." Other well-known brain foods of this nature are Sanatogen and Plasmon.

Technical casein furnishes a striking example of an industry generated by the research chemist from a practically valueless by-product—skim milk—a large proportion of which found its way into the "sewers."

MARRAM GRASS FOR PAPERMAKING.

Marram grass grows wild in many parts of Europe and North Africa, and it has also been introduced into Australia, North America, and other countries. It has a special value as a sand binder, owing to the tough, wide-spreading, penetrating character of its creeping stems and its rigid weatherproof leaves, which grow in tufts from a foot to 3 feet in height. It is practically indestructible; burning, cutting, or eating it off makes it grow with greater vigor, and the stems will not perish if buried yards deep in salt sand. In some parts of England the sand-hills or dunes which serve as a natural sea wall are only kept together by this grass. Cattle and horses eat and thrive on it. The leaves become tough and full of fibre with age, and it was suggested they might be turned to useful account by the paper-maker. According to a note in the Kew Bulletin, a sample of the leaves from the sand-hills of Norfolk have lately been tested by Messrs. Clayton, Beadle & Stevens, paper manufacturers, who found they possessed quite useful qualities as a source of material for paper making. The grass was boiled under pressure without passing through crushing 2rollers, and then bleached. The figures for the yield of unbleached and bleached fibres, expressed on the original green weight of stem as received and on the dry weight, were as follows:

	Green stem.	Dry stem.
Unbleached. . . .	17.7 per cent.	31.4 per cent.
Bleached.	13.1 per cent.	25.0 per cent.

The average length of unbeaten fibres contained in the pulp, taken on an average of ten measurements, was found to be 0.65 mm.

Marram grass is found to produce a soft pulp with a short tear, which more nearly resembles in general feel and external appearance the pulp produced from Esparto or chemical aspen wood pulp.

From this it would appear possible that this grass, which grows so freely in sand, where scarcely any other plant can exist, might be made to serve the purpose of a sand-binder, and at the same time yield a crop of leaves that could be used by the paper manufacturer. The grass requires no cultivation, and it is easily multiplied by transplanting the tufts or from seeds which are produced in great abundance. There are many thousands of acres of barren sand on our coasts which are at present not only waste, but a menace to farmers and others, but which might be made profitable by means of marram grass.—Paper Making.

Canadian News in Chicago.

Special to Pulp and Paper Magazine.

Ottawa, February 24, 1913.

Local mills are the latest to take part in the invasion of the Chicago news print market. It is understood that the firm of J. R. Booth have signed up contracts in the Windy City for the year which involve large deliveries, thus following the lead set by the Spanish River Company and Price Bros. some time ago, who forced their way into the Chicago markets. It is believed here that it is almost hopeless for the Wisconsin mills to attempt to keep the Canadian companies out of the market, for if it comes to a fight the Canadian companies, with their almost unlimited pulp wood supplies and extremely cheap water power, can compete to advantage all the time. That the Americans themselves recognize this was shown by the representations made by United States manufacturers at the time the Reciprocity Act was being framed, when it was explained to the Government authorities that the Canadian mills possessed great natural advantages over the American; that labor and mechanical conditions and transportation facilities were at least equal in both countries and that the resources of wood and water power threw the balance immeasurably in favor of the Dominion. Therefore, the American manufacturers asked for such protection as would place them on an equal competitive footing. The only factor which militates against Ottawa export is the freight rate on paper which, for the distance, is unduly high.—"Mac."

Interswitching Order.

Special to Pulp and Paper Magazine.

Ottawa, February 25, 1913.

Of great interest to shippers of pulp and paper was an application heard by the Railway Commission last week concerning a new draft interswitching order proposed. The proposed order provided that when a shipper sending a car over the line of one railway wished delivery at the terminals of another the latter road, known as the short haul carrier, should perform such service for a charge which, unless mutually agreed on by the carriers, should be for private sidings one cent per 100 pounds, with a minimum charge of $3 per carload; and for public team tracks, one and a half cent per 100 pounds, with a minimum charge of $5 per carload. The former interswitching order did not specify team track delivery, and the railways have on occasion, when their terminals were congested, placed embargoes on shipments from other roads, claiming that team tracks were not specified in the existing regulation. At the hearing, however, Mr. J. E. Walsh, for the Canadian Manufacturers' Association, claimed that the shippers had been practically given this service since 1908, and that the old order was framed with a view to providing joint rates. After considerable argument the case was adjourned indefinitely. Mr. Frank Hawkins, secretary of the Canadian Lumbermen's Association, represented lumber and pulp interests.—"Mac."

It is reported from Quebec that the Wayagamack Pulp and Paper Co. has sold its timber cut for the present season at a price which will net over $90,000.

AMERICAN PULP AND PAPER CONVENTION REPORT

Special to Pulp and Paper Magazine.

New York, February 20, 1913.

The thirty-sixth annual convention of the American Paper and Pulp Association was held to-day in this city at the Waldorf Astoria Hotel, 34th Street and Fifth Avenue. The morning session was taken up with the reading of reports of the various divisions of the associations and the election of officers for the ensuing year, while the afternoon was devoted partially in a moving picture exhibition under the auspices of the National Association of Manufacturers, showing the prevention of accidents in manufacturing plants; and the reporting of the committee appointed by President Hastings during the morning on resolutions.

Judge Charles F. Moore, editor of Paper Inc. and legal advisor of the West Virginia Pulp and Paper Company, was appointed Secretary-Treasurer of the Association. His appointment caused considerable stir in the trade.

Arthur C. Hastings was again elected President, but it is intimated that Judge Moore is being trained for that position.

The convention was brought to a close by a banquet in the evening in the commodious hall in the hotel, at which seven hundred and twenty-four members of the Association and their guests were present. Among the speakers were: Charles F. Moore, toastmaster; Hon. Levi Bancroft, ex-Attorney-General of Wisconsin; Hon. John A. Dix, ex-Governor of New York; Hon. Henry A. Wise, the Rev. Nehemiah Boynton, D.D., and Hon. Edwin A. Merrit.

The following vice presidents of the Association were elected to conduct the different divisions during the ensuing year:

News—C. A. Babcock, Wisconsin River Paper & Pulp Co., Stevens Point, Wis.
Book—A. G. Payne, Jr., New York & Pennsylvania Co., New York, N.Y.
Wrapping—F. L. Moore, Newton Falls Paper Co., Newton Falls, N.Y.
Chemical Pulp—Thomas Hunter, Battle Island Paper Co., Fulton, N.Y.
Writing—C. A. Crocker, Crocker Burbank & Co., Inc., Fitchburg, Mass.
Tissue—E. C. Robertson, Robertson Brothers, Hinsdale, Vt.
Coated Board—B. C. Hill, Niagara Coated Paper Co., Niagara Falls, N.Y.
Board—C. R. White, Congress Hotel, Chicago, Ill.
Coated Paper—Martin Cantine, Saugerties, N.Y.

In welcoming the members to the general meeting of the convention, President Hastings made the following address:

"At this, the thirty-sixth annual meeting of the American Paper and Pulp Association, of which I have been honored in holding the position of President continuously for over four years, this being my seventh annual report, by reason of previously holding the office when the Association was more of a social organization than at present, therefore it makes it rather difficult to include anything in my report to-day that may be said to be absolutely brand new.

"You will be glad to know that the membership of the Association was never larger than at present; that while in 1908 we had a membership of one hundred, we have been growing until at the last annual meeting we reported 260 manufacturers as active members, and to-day we have increased our membership to 275, located in twenty-four States, and that while last year we were having reports sent us from 356 individual plants in the country, to-day we have 375 reporting, so it can safely be stated that we have reporting to us over 80 per cent. of the total amount of paper manufactured in the United States.

It is unfortunate that many of the smaller concerns do not appreciate the work we are doing to the extent of reporting, or assisting financially in the support of an institution that is for their benefit, perhaps more so even than for the larger concerns. It is a selfish position that they occupy, and any injury that is being done them may be said, in a general way, to be partly their own fault. A united industry, representing 100 per cent. of a trade, must receive more attention at the hands of legislators, railroads, labor organizations, etc., than a divided industry, therefore every manufacturer should use his best endeavor to secure other members, and this can easily be done by personal solicitation.

Report of the News Division.

The report of the News Division was presented by Herbert J. Brown, Vice-President:

"To the manufacturers of news paper the most gratifying feature of the year 1912, is that during the entire year, water power conditions throughout the United States were unusually good. As a result, the importations of ground wood pulp for the year were 82,000 tons less than in 1911.

"The news mills reporting to the Association have produced during 1912 about 1,270,000 tons, or 95 per cent. of their normal capacity. This is about 65,000 tons more than in 1911; shipments during the year were about 1,257,000 tons, leaving stock on hand on December 31st of approximately 40,000 tons as compared with 27,640 tons on December 31, 1911.

"If this were all, the news manufacturers might feel very well satisfied, but unfortunately, there are other conditions which may well make him apprehensive of the future. The year 1912 gave a foretaste of what may be expected under the operation of the so-called Reciprocity Act. The importations for the year were 88,000 tons against 59,000 tons for 1911, an increase of about 50 per cent. Of this large importation, 74 per cent. came in free of duty. By the end of the year 1913, the capacity of Canadian mills will be further increased by some 150,000 tons, most of which will doubtless seek an outlet in this country. Our own increase for 1912 will be about 30,000 tons, making a new product of about 180,000 tons, against an estimated increase in consumption of 100,000 tons.

"When we consider the probable effect on price of this great increase of production, and realize that our own Government will doubtless continue to encourage Canadian mills at the expense of the American, it is small wonder that many makers of news are casting about for other lines that will promise better for the future, or are considering the advisability of dismantling their mills and selling their power in the form of electricity."

Report of the Wrapping Paper Division.

Vice-President Stokes, of the Wrapping Division, as follows:

The manufacturers of wrapping paper during 1912 enjoyed a good volume of business. The demand, while

not equal to the production during the early months of the year, improved with the increase in other branches of business, which began in the early summer and continued till the end of the year.

According to the statistics of the Association, 71 companies reporting to it produced in 1912 5,526,252 tons or 89 per cent. of normal output. Shipments were 100 per cent. of the output, which may be considered a satisfactory and healthy condition.

These figures compare with previous years in percentages as follows:

1909 production...81 per ct. Shipments...100 per cent.
1910 production...84 per ct. Shipments... 99 per cent.
1911 production...83 per ct. Shipments... 99 per cent.

Prices during the year have been fairly well maintained. Starting at a lower level at the beginning of the year they became firmer as the demand increased, but are not yet at a point where they produce a fair margin of profit, except perhaps in the case of some mills, which through the advantage of an especially favorable location have a lower cost of raw materials or conversion.

Report of the Coated Paper Division.

Martin Cantine, Vice-President of this division, made the following report:

"This is not a swan song, but a few cold facts as they have come to my observation, and have made me sit up and take notice.

"The coating industry in this country is not an old one, but for many years was done by a portion of manufacturers in an easygoing way, with not so much thought as to what modern improvements and necessitates might call forth. A few years back you could count the coating mills on one hand and it was not a hard task to get adequate returns upon the investment. To-day there are 52 coating plants.

"The coating division during the past year has had a hard struggle to keep their mills going, and very few, if any, have been able to work up to their capacity.

"New mills and additions to the present ones are increasing the production nearly 20 per cent. per annum. The rate of increase cannot continue under existing conditions without serious results.

"The price of nearly all raw materials are advancing. The set process of printing has caused many printers and lithographers to install this type of press and substitute plain for coated papers. This manner of printing is still in its infancy, but rather a healthy baby.

"The tariff now stares us in the face, and should reductions on coated papers be made we will have added burdens to carry.

"At the present time profits in the coating line are small, on a large volume of business, and in many cases long credits are given. When figuring the percentages of gain, as against the total sale, one can plainly see this class of goods is sold on a very low margin of profit.

"It would be well for those thinking of entering this field of manufacture to do so with their eyes open. The coming year does not look encouraging, but still we hope to be able to greet you at our next annual convention, even if we are in depleted circumstances.

Report of the Chemical Pulp Division.

The report of the Chemical Pulp Division was presented by Vice-President Thomas Hunter as follows:

"The Chemical Pulp Division is pleased to report that the future of this industry looks more promising than it has in the past ten years. There seems to be plenty of pulp to go around, but we are all getting better prices on the average than for any length of time since I have been in the business. The paper mills have enlarged and put in new machines or new mills have been built about fast enough to take care of the increased foreign importations. As far as I know there has been no new sulphite mills built in this country in several years. We hear of enlarged plants and new ones contemplated in Canada, but we feel very sure that no one will build in this country for the prices of sulphite have not yet reached the point where a person could not buy a sulphite mill cheaper than he could build one. The question of wood is a very serious one for those who have to look to the open market for their supply. Where it takes from 15,000 to 25,000 cords of wood to supply your mill it is almost impossible to buy this quantity of spruce at a price that you can make it into unbleached pulp and make any profit.

Report of the Official Chemist.

Arthur D. Little, the official chemist, presented his report, as follows:

The most notable event of the year from the standpoint of this report was the Eighth International Congress of Applied Chemistry, which was held during September in Washington and New York. Over thirty countries were officially represented, and the total membership was about 4,500. The sessions of the congress brought together the most eminent workers in applied chemistry from all parts of the world, and the papers presented required twenty-six volumes for their publication. One volume was devoted to the papers read before the section of starch, cellulose and paper, of which your chemist had the honor to be president. It is greatly to be regretted that the number of American paper-makers who were enrolled as members of the congress, or who attended the sessions of this section, was very small. Reference will be made later to the more important papers of especial interest to members of the Association.

The establishment of an experimental paper mill by Arthur D. Little, Incorporated, has, we believe, proved to be a factor of considerable importance in the development of the industry. The mill, which is located in the Fenway district in Boston, is equipped with a 30-inch machine with both cylinder and Fourdrinier ends, and may also, with slight modifications, be operated as a board machine. The supplementary equipment includes a rotary digester carrying about 200 pounds of stock; bleach chests and drainers; two 50 pound beaters and a small Jordan engine. Experience has proved that the results obtained in this mill are directly comparable to those secured in practice.

Certain new sources of paper stock deserve much more careful consideration by your members than they have yet received. Further researches by Raitt into the paper-making qualities of bamboo amply confirm the general opinion of fibre experts to the effect that bamboo is especially well adapted to the requirements of the industry, and should become an important source of paper stock. Raitt concludes that the sulphate process is best adapted to the reduction of bamboo, and that 80 per cent. of the Indian bamboo stand is made up of species which are available for paper-making. The earlier difficulties of treatment are overcome by thorough crushing of the whole culm, including nodes, when a very even, satisfactory pulp is obtained with yields of 46 per cent. unbleached and 44 per cent. bleached pulp. Raitt estimates that a mill producing 10,000 tons of bamboo pulp per year would require for a continuous supply of raw material a bamboo area of 10 to 22 square miles.

Attention is again called by Remington and others to the already demonstrated merits of Adansonia fibre as a stock for the manufacture of especially strong papers. It yields by the soda process 47.5 per cent. of unbleached pulp, and 42 per cent. bleached. The ultimate fibres resemble those of Manila hemp.

Von Possanner, after studying fibres from the German colonies, reports that Ponzolzia hypoleuca yields 58 per cent. of unbleached fibre, which is long and supple and resembles in some respects both linen and cotton. It is easily bleached and the yield of bleached fibre is 50 to 54 per cent.

The results obtained by Beadle & Stevens in the treatment of Hedychium Coronarium indicate that this tropical plant has very promising possibilities for papermaking. The fibre is stated to be equal in strength to the best pure manila. The raw fibre, when mechanically freed from pith cells, yields 50 per cent. of unbleached pulp. When the pith cells are retained in the pulp, a parchment-like sheet is formed, although the pulp is exceedingly free working.

The utilization of the pith and fibre of waste sugar cane, after extraction of the sugar, is being developed along altogether new lines by the United Fruit Company, and the results thus far obtained point to ultimate developments of the first important to the paper and board industries.

The new Winestalk process for the removal of ink from waste papers and recovery of the fibre in a condition, as regards strength and color at least equal to that of the original stock, has shown itself to be remarkably efficient and gives promise of becoming an important factor in the conservation of paper stock. In the direction of conservation also a considerable interest attaches itself to the apparatus recently installed by the Treasury Department for laundering soiled paper money.

Notable examples of the utilization of waste material are to be found in the new mill of the West Virginia Pulp and Paper Company, at Covington, Va., for the manufacture of board of excellent quality, from rossing waste, and the mill of the Southern Wood Distillates and Fibre Company, at Bogalusa, La., for the manufacture of board from wood waste by a new process involving treatment of the cooked waste under heavy crushing rollers.

Attention should be called to the series of papers by Zacharias which appeared in sixteen numbers of Papier-Fabrikant, and had for their subject matter the boiling and steaming processes for making brown mechanical wood pulp. The articles are too long for abstracts here, but lead to the conclusion that boards made from boiled wood pulp show a decided advantage over steamed wood pulp board in tensile strength, resistance to folding, liability to tear, etc., and exhibited a greater stretch.

Von Weimarn reports some exceedingly significant observations upon the facility with which different kinds of cellulose may be rendered gelatinous and plastic or brought into a colloidal solution by treatment with aqueous salt solutions under suitable conditions of concentration, temperature, pressure and duration of action. The gelatinization is accelerated in most cases by increased temperature and pressure, since the solubility of the salt used is thereby increased. Among the numerous suitable salts may be mentioned common salt, chloride of calcium and the thio-cyanates of calcium and barium.

Wrede proposes to increase the retention of starch in paper by cooking the starch in a solution of silicate of soda, taking care to avoid overcrowding. The method is claimed to make possible a 66 per cent. retention.

An important study into the causes of the yellow discoloration of paper has been made by Schoellen ,and appeared in seven numbers of Wochenblatt fur Papier Fabrikation. Papers containing mechanical wood pulp discolor very readily with age, and papers containing straw and esparto are likewise subject to discoloration. Chemical wood pulp turns yellow to a less extent, while the paper made entirely from rags suffers slight discoloration. The coloring may be due to destruction of the ultramarine or other blue color used, or to the actual yellowing of some component of the paper. The liability of the paper to discolor may be determined by heating under uniform moisture conditions at 95° C. for three, five and thirty hours. The intensity of color developed indicates the discoloration to be expected when the paper is aged. The most important cause of the discoloration of paper is the rosin size, and Schoeller states that by previous treatments of the rosin with bleaching powder such changes are induced in the rosin that size made therefrom has no tendency to discolor the paper.

It has been suggested that figures on the shrinkage of rags in the mill would be of interest to the Association. Unfortunately no very reliable figures of losses in American practice have been published, nor, so far as we know, compiled. The most complete available data still remains, that compiled by Dr. Wurster from experiments made by Ziegler and Wurster, in 1875, in the Dresden paper mills, and tabulated in Hoffman's Treatise on Paper Making, to which, as the tables do not admit of reproduction in a report of this kind, those especially interested are referred. It may, however, be stated that the percentage of moisture in the sorted rags ranged from 4 per cent. to 7 per cent. The loss on cutting and dusting shown by the average of several years of operation varied from 4 per cent. to 6 per cent. The usual losses in boiling and washing were from 10 per cent. to 12 per cent., although in some cases much higher. The loss during the bleaching usually ran from 3 per cent. to 5 per cent., and the yields of absolutely dry stock from 100 pounds of rags showed as extremes 36 pounds for old rags containing wool, and 74 pounds for clean, bleached linen rags. A fair average yield is 60 per cent. on the basis of these experiments.

It has been found in English mills that, taking the average of all qualities, rather more than half the loss is due to boiling, and the rest to washing and bleaching, the yield of bleached half stuff being 88 per cent. for the best new pieces, 73 per cent. for No. 4 cotton, 83 per cent. for No. 1 linen and 75 per cent. for No. 3 linen. In general, it may be said that the losses in weight which rags sustain during boiling vary from 4 per cent. to 14 per cent. for cotton, and 7 per cent. to 24 per cent. for linen. The percentage of loss on bleached sulphite is about 5 per cent.

Your chemist would again urge upon the Association the many important advantages which would accrue to its members through the establishment by the Association of official specification for a large proportion of the supplies used in the mills.

The tenth annual Convention of the National Paper Trade Association was held in the Hotel McAlpin, New York, on February 19, 1913.

A special meeting of dealers in manila paper was held at the Hotel McAlpin, New York, on February 18, 1913.

The meeting was called to order at 2.45 p.m., by John Leslie, and W. F. Power of Carter Rice Company was elected permanent chairman.

Paper-makers were plentiful at the thirty-sixth annual banquet of the American Paper and Pulp Association, which was held on Thursday, February 20, at the Waldorf Astoria, Thirty-fourth Street and Fifth Avenue, New York. Though the limit of 500 guests was placed by the committee, that number was increased by 225 by the time the doors were opened. As each guest passed in he was presented with a handsome pair of pocket opera glasses, a reproduction of which is given on the next page.

The guests included Hon. Levi H. Bancroft, Judge Charles F. Moore, Hon. Edwin A. Merritt, Jr., Hon. Henry A. Wise and Rev. Nehemiah Boynton, D.D., and Hon. John A. Dix.

ST. MAURICE VALLEY NOTES.

Special to Pulp and Paper Magazine.

Grand Mere, February 26, 1913.

Construction work on the new water power development for the Laurentide Company, Limited, is proceeding rapidly. The Talbot Company have their offices, boarding houses and construction camps nearly completed and are at work on the first coffer dam.

The Quebec Government have sent an engineer to take soundings for the new storage dam on the Upper St. Maurice River and the work will be pushed to completion as rapidly as possible.

The Logging Department of the Laurentide Company, Limited have made an interesting study of the cost of lopping the tops of trees felled in their operations. About 15,000 tops have been lopped and the cost works out at 35 cents per thousand feet, board measure.

The Canadian Forestry Association has laid out an important program for the coming year, and committees have been appointed to undertake the work. An effort will be made to form branches of the association in small cities and towns to educate the people along lines of forest conservation and proper utilization and to study local forestry problems, as the firewood supply, maple sugar industry, fire protection and shade-tree planting. A study is to be made of the best methods of exploration and classification of Government lands, and efforts will be made to induce the various Governments to push this classification into forest and agricultural lands as rapidly as possible.

A meeting of the St. Maurice Forest Protective Association was held at the Place Viger Hotel, Montreal, to receive reports for the year past and to lay out the work for the coming season. Seven million one hundred and seventy eight thousand five hundred and sevtney-three acres were patrolled at a cost of a little less than one quarter of a cent per acre, the Limit Holders furnishing the money and the Quebec Government contributing for the protection of unlicensed lands.

Ninety-four fires were extinguished, whose origin was as follows:—Railway locomotives, 17; river drivers, 2; settlers, 11; fishermen, 22, and unknown, 42. Forty fires occurred along railroad rights-of-way. The fishermen were mostly those who went out on Sundays from La Tuque. Gasoline speeders patrolled the rights-of-way of the Transcontinental and Quebec and Lake St. John Railways travelling in all for the season 19,560 miles.

Mr. J. M. Dalton, for the Gres Falls Company, was elected President, Mr. S. L. de Carteret, for the Quebec and St. Maurice Industrial Company, Vice-President, Mr. Henry Sorgius, Manager.

At a banquet held at the Place Viger Hotel in the evening the Hon. Minister of Lands and Forests of Quebec, Mr. Jules Allard, Mr. W. C. J. Hall, Superintendent of the Forest Protection Branch; Mr. G. C. Piche, Superintendent of the Forestry Branch and Mr. Hibbert, Chairman of the Quebec Public Utilities Committee, were the guests of honor. The other guests were: Mr. R. H. Campbell, Dominion Forester; Mr. E. J. Zavitz, Forester for Ontario; Mr. Wm. Power, Vice-President Canadian Forestry Association; Mr. James Lawler, Secretary Canadian Forestry Association; Mr. Clyde Leavitt, Forester for the Conservation Commission; Mr. Brnickerhoff, Forester, Riordon Paper Company, and Messrs. Winegar and Ellis, Foresters of the Canadian Pacific Railway. Mr. Elwood Wilson presided.

The Hon. Minister in the course of a very interesting address expressed himself as much gratified at the work done by the Association, and said that the Government would not only continue its grant for the coming year, but would increase it. He hoped that like associations would be formed in other parts of the province and said that the Government was determined to do all in its power to protect the forests. He mentioned the Order-in-Council passed last year, fining every timber license holder who did not have out proper and sufficient fire-rangers five dollars per square mile per annum, and said that this would be rigidly enforced.

He called the attention of the license holders to the fact that they were in no sense owners of the limits, but only lessees, and that they would have to operate their limits for the good of the people and, as the Government might stipulate. He said the real owners of the forests were the farmers, the laborers in the cities and the people at large, and that we must use, protect and hand down our natural resources for posterity.

He outlined the new policy in regard to the leasing of water powers and said that in all things pertaining to her natural wealth Quebec would do all that was possible to rationally use and conserve it.

Mr. Clyde Leavitt outlined the work being done by the Railway Commission to protect the forests from railroad fires and pointed out the anomaly of the Transcontinental and Intercolonial Railroads not being subject to the same rules and regulations in this regard as privately owned roads, and said he hoped that these two roads would issue the same regulations as those in force under the Railway Commission.—W.

WATERPROOFING PAPER WITH FORMALDEHYDE.

Paper can be waterproofed by painting it with, or soaking it in, a solution of casein, and then acting on it with formaldehyde vapor. After drying, the paper is completely waterproof. The casein may be replaced by gelatine, glue, or fish glue. If weak baths are employed the formaldehyde can be used in solution, in combination with the solution of casein, gelatine, etc. In this case, however, the work must be carried out rapidly, and only as much of the mixed solution should be prepared as can be used at once. Even then only comparatively small quantities of paper can be waterproofed in this way.

THE DETECTION OF FAULTY SIZING IN HIGH-GRADE PAPERS

By C. Frank Sammet,

Assistant Chemist, Leather and Paper Laboratory, Washington, D.C.

The materials first used for sizing paper were flour, starches, and gums. Toward the end of the fourteenth century these were gradually displaced by the introduction of animal size, which has remained to the present time the standard sizing material for writing papers. The value of rosin size, which was first used at the beginning of the nineteenth century, has not equaled that of animal size for papers of this kind.

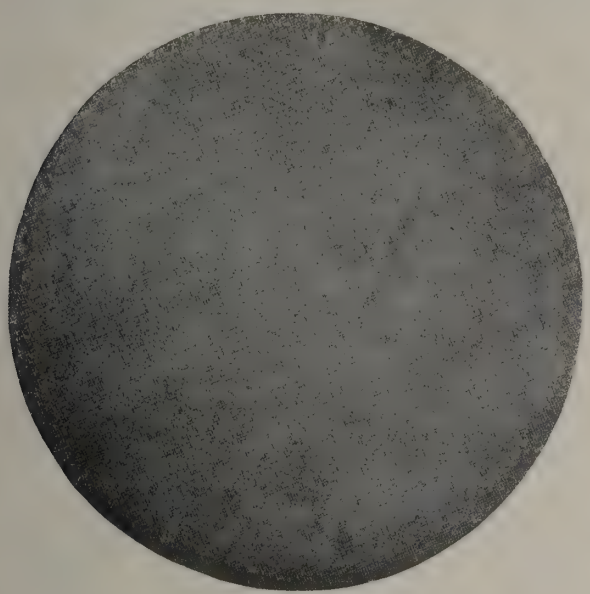


FIG. 1

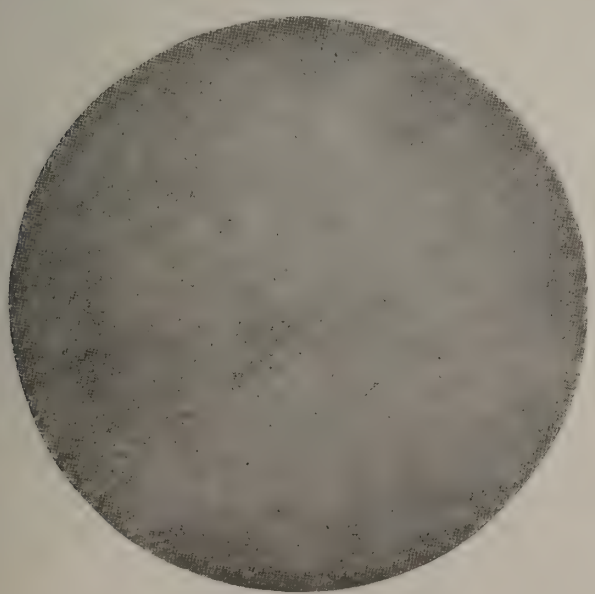


FIG. 2

Figs. 1 and 2.—Appearance of Well-Sized Paper after test with iron tannate ink

This is true also of all other sizings since invented, since whatever they may have in common they do not impart to the paper the characteristic effects of animal sizings.

A certain degree of flexibility is imparted to the paper by animal size, which not only adds to the strength of the sheet, but aids materially in its durability. Rosin and other sizings produce a stiffness which tends to brittleness and impairs the folding endurance, so essential for resistance to severe handling and long service. The writing and erasure qualities of animal-sized papers are generally markedly superior to those of papers sized with rosin or other sizings, and the resistance of these papers to deterioration from light, fumes, heat, and moisture is greater, due, in part at least, to the fact that rosin and other sizings become discolored and are more susceptible to chemical interaction. Furthermore, there are certain qualities, as feel, look-through, finish, and rattle, which make a well-made animal-sized sheet distinctive and which all other sizings have failed to produce, except, possibly, when other valued characteristics are sacrificed.

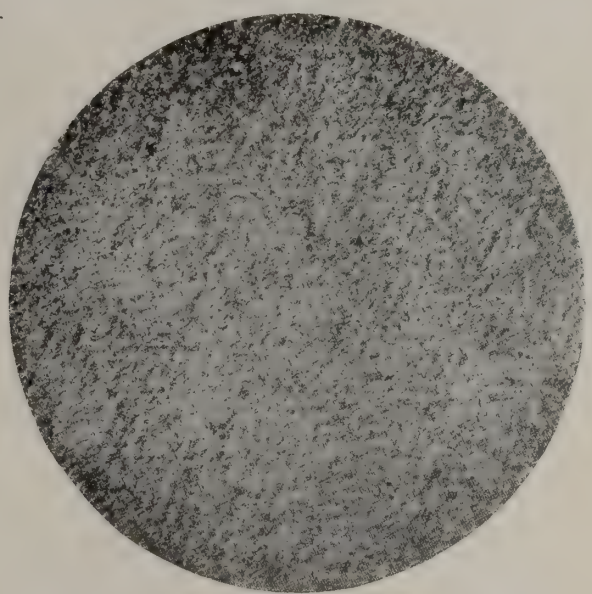


FIG. 3

Although animal sizing, when properly done with good materials, is superior to other sizings, it does not follow that all animal-sized papers are better than those sized with other materials. The proper sizing of paper requires as much care and regulation as the other operations which are so closely controlled in the manufacture of high-grade paper. For superior quality it is necessary to use superior materials. Poor stock may be improved by subsequent treatment, yet the final product can never equal that made from the best stock similarly handled. Therefore, in sizing for results which can not be excelled, it is imperative that the raw materials be of the best quality, and that all the operations of sizing and drying be controlled with knowledge and skill.

The sizing of paper is sensitive to many factors, the neglect of any one of which may seriously affect the characteristic qualities sought. Care must be given to the preparation of the size, the time and degree of extraction of the hide, the temperatures employed, the

nature of the water used, the cooling down, and the storage of the size to avoid contamination by destructive bacteria, which may liquify the glue and injure its elastic covering and setting qualities. The thoroughness with which the web of the paper is sized is dependent upon the consistency of the size, the degree

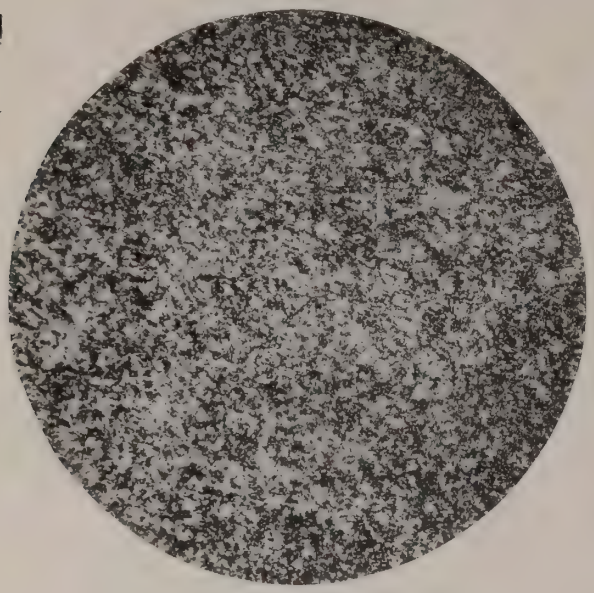


FIG. 4

Figs. 3 and 4.—Appearance of Poorly-Sized Papers in which blotches of fibres absorb the ink

of penetration before drying, the temperature of the drying, and also upon the tension under which the web is dried. All soluble salts or acid which unwashed stock may contain, and even loading materials, exert their disturbing influences and prevent the thoroughness necessary for the best and most lasting results.

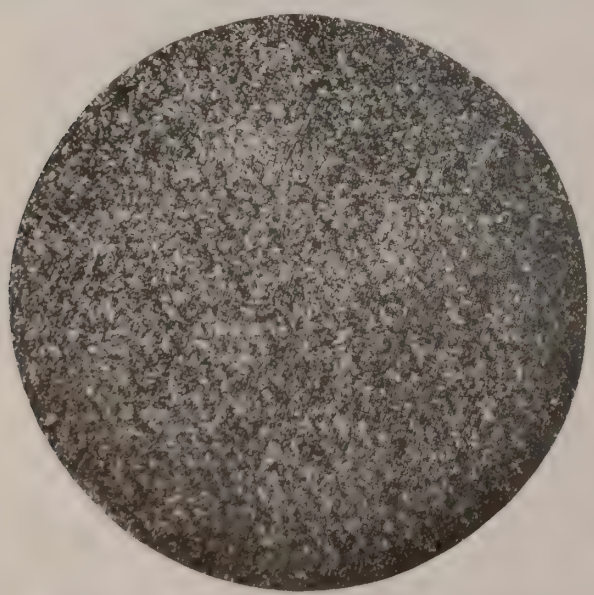


Fig. 5.—Appearance of paper with Inferior Sizing

Several procedures devised for the purpose of determining how well paper has been sized enable one to determine approximately whether or not a paper is ink resistant, but none are sufficiently delicate to permit close comparisons of well-sized papers. Methods based on the application to the opposite sides of the paper of solutions, which give a color indication as they penetrate the surfaces, are open to serious objections. Error will be introduced by applying the same amount of solution to papers of different weights, as in the case of heavy paper the rate of penetration decreases more rapidly as the supply of solution on the surface diminishes through absorption and evaporation. Humidity of the atmosphere not only affects this evaporation, but also the rate of absorption of the solution by the paper, depending on the amount of moisture which the paper contains. In many instances there are chemical reactions and a non-uniformity in the application of the solutions which may destroy the size. Those procedures in which the irregularities of the spread of ink or its appearance through the paper are interrupted also are seriously influenced by humidity, formation of the sheet, selective absorption, and the personal factor which enters into the interpretation of the results obtained.

That any of the present tests will detect poor size, upon which ink spreads, is unquestionable, but that they will detect superiority of sizing, where the writing quality has shown no distinction, is doubtful. Nearly all writing papers have good writing qualities,

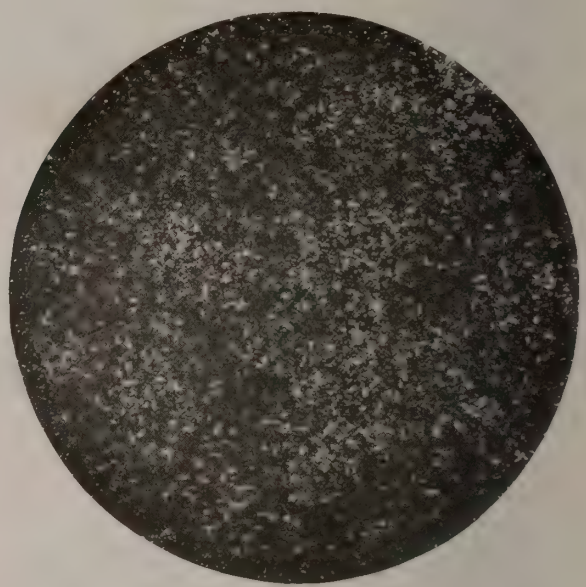


Fig. 6.—Water-Leaf Filter Paper, showing Ink Absorbed

whether they be sized with rosin or with the best grades of animal size, by careless or the most painstaking methods of sizing and drying. Current methods are therefore unfit to distinguish differences in the quality of sizing materials or in the character of processes.

The test herein described was devised to differentiate between the relative value of the sizings of papers which the current methods failed to detect. It was devised to determine whether there is superiority of sizing in papers dried in any particular way. The method shows marked differences in sizings, all of which are resistant to ink. It has been found, for instance, from the examination of hundreds of samples of papers representing all grades and weights that the sizing of many loft-dried papers is very inferior and is equaled by many machine-dried papers.

The test consists in drawing a strip of paper over the surface of an iron tannate ink and allowing it to drain and dry naturally. Upon examining this inked surface with a magnifying glass it will be found that a well-sized paper will show no indication of the fibre

having absorbed the ink, and the entire surface will be uniformly and lightly colored, as indicated in Plate I.

In more poorly sized papers blotches of fibres absorb the ink as shown in figures 3 and 5. Figure 6 shows water-leaf filter paper, indicating by the darker color that the fibres have absorbed the ink. It should be remembered that all the papers shown are, according to the ordinary methods of testing, well sized and practically identical.

Sizings may be further differentiated by rubbing the surface of a paper with an ink eraser, brushing off the loose particles, and proceeding as directed. A paper which is well sized through will still be uniformly colored and the fibres will take the ink but little.

The test is valuable in showing the faults of mill practice, especially as to whether in the sizing of high-grade papers the best results obtainable are being procured. By its use the paper maker can keep his product up to a desired high standard, and the purchaser can assure himself that where the character of sizing is an important property poorly sized papers are not accepted.

PRICE BROS.—LISTED.

Montreal, February 27, 1913.

The securities of Price Bros. & Company have been listed on the Montreal Stock Exchange, and hereafter will be traded in among the listed stocks instead of in the unlisted department, as heretofore. The securities listed consist of $4,866,666 bonds and $5,000,000 common stock. Price Bros. & Company have a timber area consisting of 6,500 square miles, containing, it is estimated, over three billion feet of lumber and over twenty million cords of pulp wood.

The study of forest areas between Lake Superior and the eastern terminals has been commenced by the forestry branch of the Natural Resources Department of the Canadian Pacific Railway. Matters relating to growth and increase data are being gathered in the different timber districts. This is the first work of its kind made in Eastern Canada, and it is being watched with exceptional interest by the lumber and pulp companies, as up to this date no information has been obtainable regarding this thickly wooded country. Co-operation with the various Provincial Governments, as well as with the Dominion Government, is being sought.

Despatches from Fredericton, N.B., show that the total receipts from timber licenses and stumpage for the past year amounted to $854,988, as compared with $803,410 for the previous year. Both the paper and lumber industries in that province are showing considerable improvement, and it is expected that as a result of recent legislation and encouragement from the Government, that they will show still further improvement.

Considerable activity has been shown by pulp and paper manufacturers throughout the Province of Quebec. Among the other changes or pending changes might be noted the following:

B. A. Scott, of Roberval, P.Q., is planning to erect a paper mill at Grand Discharge, near Chicoutimi. The Brompton Pulp and Paper Company have recently purchased 5,000 acres of timber limits at a cost of $35,000. These limits are located near Lambton, P.Q. The Belgo-Canadian Pulp and Paper Company have recently purchased from the owners over 500 miles of timber limits, known as the Metabatchouan limits, paying for them somewhere in the neighborhood of $500,000.—R.

KENOGAMI NOTES.

Special to Pulp and Paper Magazine.

Kenogami, February 24, 1913.

In a recent issue there was an extensive description of the Kenogami Paper Mills, which were just beginning operations. These mills have now been producing paper for over three months on one machine. The demand for paper has been so strong that contracts already accepted require the product of a second machine at once. Preparations have, therefore, been rushed, and the No. 2 machine has been running since early in February.

Favorable conditions have permitted the grinding of much more pulp than had been expected, so that there will be no difficulty in keeping two machines going until the water rises again in the spring, when the mills will begin to turn out their full production.

The disposal of the product has presented very little difficulty, except in the matter of selecting the best out of the large amount of business offered, and accepting no more on contracts than the company could be quite certain of taking care of properly.

No plant, however carefully planned and built, is expected to begin operations without developing troubles of one kind or other during the early stages. The Kenogami Mills have not been altogether immune from them, but they have not been of a serious nature for the most part. Large or small, they have been well taken care of by the men who have been entrusted with the handling of this big plant, men who have every reason to feel proud of the results which have attended their efforts up to the present, and who may be relied upon to see that the good work continues.

The logging operations are going along successfully under the able supervision of Mr. Grosart. There is no such scarcity of snow as is reported from other parts, so no difficulty is anticipated in getting out and driving the full cut.—R.

A NON-PENETRATING VARNISH FOR PAPER AND ENGRAVINGS.

A non-penetrating varnish is obtained by dissolving 6lb. of dammar in 35 lbs. of acetone. It is necessary to use the best and purest dammar. Colophony will give inferior results. The dammar should be bought in lumps, which should be transparent and practically colorless. Powder is to be avoided, as it is always adulterated, or impure, to say the least of it. The lumps are crushed and fused over a gentle heat until they form a silent liquid. All water must be got rid of, and the dammar crackles and spits as long as water is escaping from it. Great care must be taken not to burn the resin, and to keep the heat as slow as is consistent with keeping it liquid. An enamelled iron pot is best to melt the resin in. The melting is facilitated and hence the danger of burning the resin is avoided by heating the resin with oil of turpentine and a little Venice turpentine. The acetone must not be added to the resin until it is quite cold, and the varnish must be made and kept in a closely stoppered vessel, as acetone is extremely volatile. The varnish is diluted for use with collodion to the desired consistency. The cost it gives have a high lustre, and resist the air far better than any spirit varnish. They must, however, be as thin as as posible or they will crack if the paper is bent.—Paper Making.

B. C. FORESTRY REPORT.

Special to Pulp and Paper Magazine.

Victoria, B.C., Febraury 22, 1913.

The Forest Branch of the Department of Lands issues its first report to-day. The branch is only six months old, but even in the short time since its organization it has done much to advance the cause of scientific management of the Forest Resource.

British Columbia has a wooded area which produces annually, according to a general estimate recently made, five times as much as is cut. The wise development of the whole timber growth and its protection from fire are the objects of the forestry movement now afoot in this province. The most important portion of the work is the safeguarding of the merchantable timber already standing and the Chief Forester devotes the bulk of the report to a consideration of the ways and means of fire protection.

The creation of forest reserves in which permanent improvements for the protection and harvesting of the timber can be made is strangly recommended. In many districts these reserves are of most consequence for their influence in equalizing the flow of water needed for irrigation.

The timber of the province has been reserved from alienation since 1907, but under the new Forest Act of 1912 timber sales are being made on forest areas that have been cruised and surveyed for that purpose.

As yet only a beginning has been made, but nevertheless the sales already in hand will yield in royalty, upset price, and rental, about $176,000 to the Government. The policy is to increase the annual cut up to the annual growth of the forest, which is estimated to be about 6½ billion feet, board measure.

During the year the Government scalers scaled 1,105,393,751 feet, board measure, of timber, exclusive of that out on lands Crown-granted prior to 1887, on which one cent a foot is charged.

The total forest revenue for the year was $2,753,579. Included in this are the rentals of special licenses, amounting in all to $1,846,000.

The Government expenditure, including the amount that constitutes the Government's half of the Forest Protection Fund, was $278,647. To this should be added the half of that Fund contributed by licenses and lessees of Crown lands and owners of Crown-grant lumber, and railway companies amounting to a further $127,570.

That is to say, the amount paid out from the public revenue of the province for the protection and management of the provincial forests was one-tenth of the total revenue received. The report points out further that out of every four dollars coming into the Provincial Treasury one is from the forest.

The annual meeting of the Interlake Tissue Mills, Limited, was held at their head office, Telephone Building, Toronto, on February 19th.

The management reported the mill would be in operation on February 25th.

The company will make: Plain and crepe toilet papers, white, manilla and colored tissues, and a large variety of light wrappers.

A directors meeting was held after the regular annual meeting, at which the old officers were re-elected.

George Carruthers— President and General Manager. I. H. Weldon, Vice-President and Treasurer. S. F. Duncan—Secretary.

PUBLIC MEN AND PUBLIC LIFE IN CANADA.

The above work is now off the press in two volumes by the Hon. James Young, former member of Dominion and Ontario Parliaments, Provincial Treasurer for Ontario, and author of numerous works and essays on Canadian life.

The work is of general interest and is extremely well written. It covers all of the Public men in Canada and the Canadian politics and life since Confederation.

The two volumes are distinct in subject matter. Vol. 1 deals with Public Men and Public Life as a public journalist. Vol. 2 gives the political aspects of the country and discusses the various leaders. Biographies of many of our leading journalists and paper men are included.

Altogether the work is extremely valuable and should be in the hands of every Canadian, giving an accurate and interesting story of the Canadian Confederacy.

Vol. 1, $2.00; Vol. 2, $2.25.

William Briggs, 29-37 Richmond St. West, Toronto.

FOREST PRODUCT OF CANADA.

From the Dominion Department of the Interior comes a report on the manufacture of "lumber, square timber, lath and shingles for the calendar year 1911," compiled by R. G. Lewis, B.Sc.F., assisted by W. Guy H. Boyce. It gives an account of the quantity of wood manufactured into lumber in the Dominion and the various provinces for that year, the total cost and the average cost per thousand feet, board measure, with the proportions of the total product manufactured in each province. It also differentiates among the different kinds of wood and the character of their manufacture. The report is very exhaustive and has evidently been prepared after careful examination gleaned from many sources, and altogether the report reflects the greatest credit on the author and compiler.

The annual meeting of the St. Lawrence Paper Mills Company, Limited, which owns mills at Mille Roches, Ontario, and Thorold, Ontario, was held on February 19th, at the head office of the company, Bell Telephone Building, Toronto.

The company's fiscal year ended December 31st, and the report submitted to the shareholders was considered very satisfactory.

The management also reported that the electric power plant, which the company has been building at Merritton, Ontario, is now ready for operation and that the new mill which is being built as an addition to its Thorold mill, will be ready for operation about the 1st of May, increasing the capacity of the mill about twenty tons per day.

The folowing directors were re-elected:—I. H. Weldon, G. R. Copping, S. F. Duncan, S. B. Monroe, W. M. Loveland, A. B. Connable, A. A. Wheat, James Grant, Chas. B. Hays.

The directors held a meeting later in the day and re-elected:—I. H. Weldon, President of the Company; T. A. Weldon, Vice-President, and S. F. Duncan, Secretary-Treasurer and General Manager.

Mr. Racy, formerly of Price Bros., has been appointed manager of lumbering and logging operations for the St. Lawerence Lumber and Pulp Coporation at New Carlisle, Que. This firm will also erect ground wood, sulphite and news mills of large capacity.

NEW PATENTS

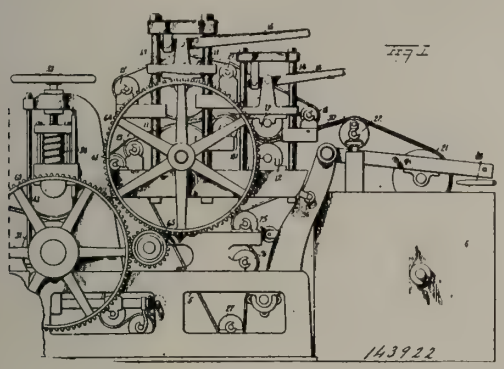
All patents are specially compiled for the PULP & PAPER MAGAZINE. Those of United States are by Davis & Davis, Patent Attorneys, Washington, D.C. Full particulars with drawings may be had by addressing the Commissioner of Patents, Washington, D.C., enclosing five cents per patent. Canadian patent particulars may be obtained from the Patent Office, Ottawa. In all cases give number of patent. We also carry brief descriptions of important English, French and German patents.

No. 144,136. Wood Pulp Manufacture. Jacob Aktschourin, Tupik, Russia.

A process for the manufacture of wood pulp from resinous wood, which consists in diminuting the wood, subjecting the same to the treatment of a diluted alcolinous lye at a low temperature, extracting the resins after this step from the solution by means of filteration and subjecting the wood to the action of the filtered solution at a pressure of 5-6 atmospheres under coaction of steam.

Wet Machine, Canadian patent No. 143,922, by Henry Geer Rogers, Au Sable Forks, New York, U.S.A.

The combination in a pulp machine, of squeezing rollers, tension breaking rollers arranged in advance of and driven at a relatively higher peripheral speed



than the squeezing rollers, and a presser roller to engage the pulp, and prevented from slipping under the action of the tension breaking rollers arranged intermediate the squeezing and tension breaking rollers.

U. S. Patent No. 1,052,495.

Apparatus for Removing Impurities from Pulped Waste Paper, Canadian patent No. 143,876, by John M. Burby, Astoria.

An apparatus for removing impurities from pulped papers and other similar material comprising a receptacle, means for conveying the pulped material into the receptacle, partitions set therein transversely to the flow of the material therethrough, a tank, a screen rotably mounted therein, and means for rotating the screen, a conduit from the recpetacle into the screen, a pump connected with the tank, and a conduit from the pump into the receptacle, substantially as herein shown and described.

The partitions set therein transversely to the flow of the material therethrough, a tank, and means for regulating the level of water therein, a screen rotably mounted in the tank, and means for rotating the screen, a conduit from the receptacle into the screen, a pump into the receptacle, substantially as herein shown and described.

There is also provided a means for drawing water from the tank and delivering the same into the inlet of the receptacle.

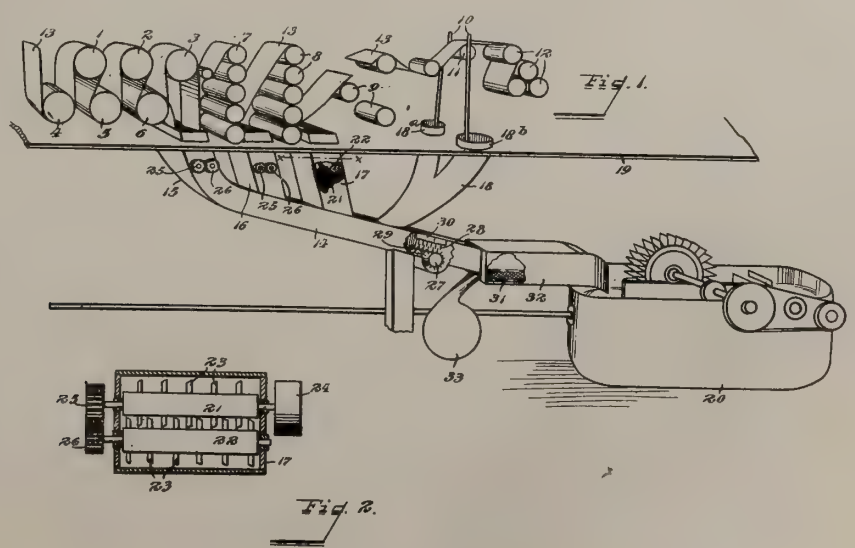
C. G. McClellan, of Johannesburg, Pa., inventor.

The invention relates to improvements in paper-making machinery, and it has for its object the provision of means for preserving the waste particles of paper pulp as they are being run through the drying and finishing rolls. In explanation of this object it may be stated that it sometimes happens that the paper pulp, while being run through the rolls, breaks, the free end of the pulp dropping down upon the floor beneath the rolls, necessitating the cutting off of a considerable quantity of the pulp before it can be again properly started through the rolls.

The inventor claims:

1. In a paper-making machine, the combination, with the rolls for operating upon the paper pulp, of an open-ended receiver for the pulp located beneath said rolls, the open end of said receiver being extended in the direction of the longitudinal axis of said rolls.

2. The combination, of the calender and finishing rolls for the pulp. of a series of open-ended receiving conduits located beneath said rolls, the open ends of



said conduits being extended in the direction of the longitudinal axis of said rolls.

3. The combination, with the rolls for operating upon the paper pulp, of a main conduit, a plurality of open-ended auxiliary conduits communicating with main conduit and having their open ends located beneath said rolls, the open ends of said auxiliary conduits being extended in the direction of the longitudinal axis of said rolls.

4. The combination, with the rolls for operating upon the paper pulp, and stripping knives for said pulp, a main conduit, a plurality of auxiliary conduits communicating with said main conduit and extended to a point beneath said rolls, and auxiliary conduits also communicating with said main conduit and extended to points beneath said stripping knives.

5. The combination, with the rolls for operating upon the paper pulp, of a main conduit, a plurality of open-ended auxiliary conduits communicating with said main conduit and extended to a point beneath said rolls, each of said auxiliary conduits having a disintegrating device located therein.

6. The combination of the rolls and the stripping knives, and a conduit having branches extending to a point beneath said rolls and knives, said conduit leading to disintegrating machinery, substantially as and for the purpose specified.

7. The combination, with the rolls for operating upon the paper pulp, of a receiver for the pulp located beneath said rolls, and disintegrating devices for the pulp located in said receiver.

Wood Pulp Machine, Canadian patent No. 144,335. Guy C. Howard, Everett, U.S.A.

A mill for the reduction of wood pulp consisting of a revolving cylinder provided with intake devices for pulp material and water at one end, and discharge devices therefor at its other end, means within said mill

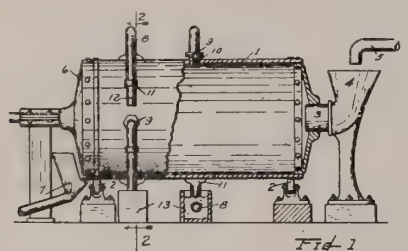


Fig. 1

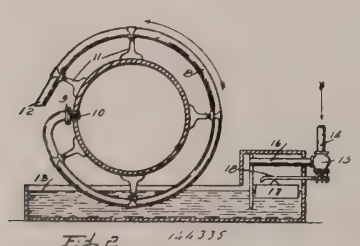


Fig. 2 144335

for mascerating said material, a peripherally arranged pipe about said cylinder having an open end and an end opening into said cylinder, and a receptacle for water into which said open end of the pipe may be submerged at each revolution of the cylinder.

Corrugated Paper Board, Canadian patent No. 143,934, by George W. Swift, Jr., Bordentown, New Jersey.

Corrugated paper board, the combination with opposite outer plane webs, of a plurality of corrugated webs between said plane webs, having their corrugations webs to the contiguous crests of the corrugations of the corrugated webs, and means connecting said corrugated webs with each other at the crests of their corrugations, said corrugated webs being separate from

FIG I

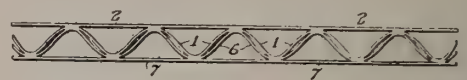
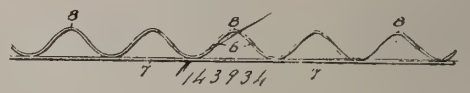


FIG II



FIG III



each other between said crests whereby said corrugated webs are relatively movable between said crests and more resilient than if connected throughout their length. And said corrugated webs being separate from each other between crests.

A Rolling Press for Paper and Paper Material-Watering Machines, to which a Movable part of the same is attached Beneath the one or beneath both Bearings of the Bottom rolls. Patented in Germany.

A rolling press for paper and paper material watering machines, to which a movable frame (b)

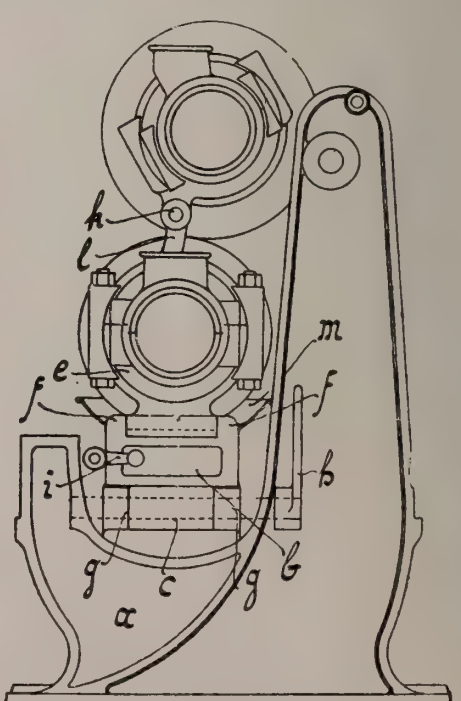


Fig. 1

is attached beneath the one or beneath both roller bearings, which frame may be turned on a horizontal axis (c)

and the upper surface (d) on which the roller bearing (e) is supported, as also the lower surface which is concave is formed about the axis (c).

The invention consists in the part of the machine lying immediately under the one, or under both lower roller bearings being rotatable about a horizontal axis, so that it may be withdrawn from the solid frame. The upper surface of the movable frame on which the roller bearing rests, as also the under surface of the latter, all concave surfaces, the axis of which coincides with the axis of the movable frame.

This new arrangement shows the advantage in that the lower roller needs only very little support; for the result of the utilization of the contact surfaces of the bearings and of the part of the frame as concave surfaces, only very little pressure is required to shove them together.

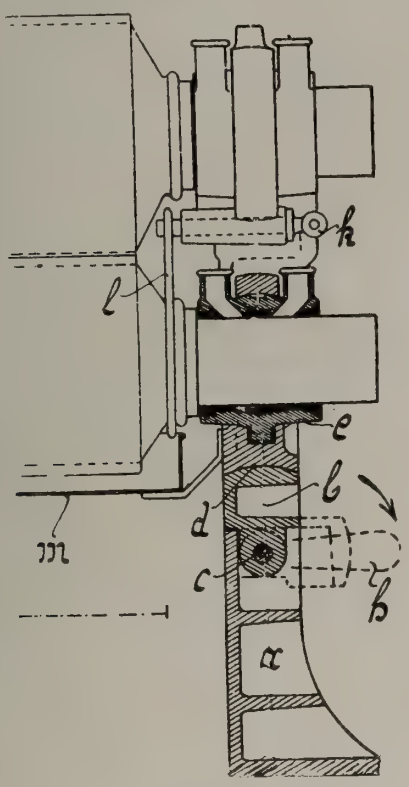


Fig. 2

Thus, when this part of the frame is taken down there will be considerable room between the bearings and the frame to change the sieves and the felt.

In the solid machine frame (a) the movable part of the frame (b) is secured by a horizontal bolt (c) so that it may be turned to let down the movable frame. The upper surface (d) of the movable frame (b) on which the lower roller bearing (e) rests forms a (concave rotating) surface the axis of which coincides with the revolving axis (b). The lower surface of the bearing (e) is the corresponding formed surface (d). Thus, with only very little upward pressure on the bearing (e) the pressed material, need, therefore, not be taken off, whenever the sieve or felt is changed.

On the part of the frame (b) are attached re-enforcements to secure both sides of the bearing. These additions are to guard against the alteration of the cross centre of the bearing while the rounding of the supported bearing surface prevents the shifting of the guage. The revolving bolt (c) is securely inserted into the frame (b) and turns in the holes (g) in the frame (a). At one end of the bolt is a handle (h). The frame (b) is turned by means of this handle. A catch (i) secures the movable frame (b) when it is in position with the bearing resting on it.

In the bearing of the upper roller a bolt (k) is inserted on which the lower roller is suspended when the frame (b) is let down. The catch basin (m) which is frame (b) can be released.

In order to distribute the load fully, on the bolt (c) it is advantageous to bore the holes slightly eccentric, so that the whole weight of the frame (b) may be fully supported by the bolt, when said frame is in its upright position; and on the other hand that it may have sufficient play when the frame is let down.

FOREST FIRES.

(Special to Pulp and Paper Magazine.)

Ottawa, Ont., February 26, 1913.

That the Province of Quebec from Gaspe to the Ottawa River should be covered by a series of forest fire protective associations similar to the one which has been doing splendid work in the St. Maurice River Valley and that the union should in turn co-operate with a union of Ontario associations is the suggestion brought back to Ottawa by Messrs. R. H. Campbell, Director of the Canadian Forestry Department; Clyde Leavitt, Director of Forestry Work for the Railway Commission, and James Lawler, Secretary of the Canadian Forestry Association, from the annual meeting and banquet of the St. Maurice Valley Association, held in Montreal last week. Mr. Lawler, when seen by your correspondent, explained that while in other forest areas the individual lumberman was called on to protect his own property from fire, the limit holders of the St. Maurice Valley had a year ago decided to co-operate. They taxed themselves one-quarter of a cent per acre and with the proceeds employed H. Sorgius, of Three Rivers, general manager, having under his control all the forest rangers in the St. Maurice Valley of which the area is some 7,000,000 acres.

This concentration of effort, according to Mr. Lawler, has enabled the lumbermen to equip their rangers with canoes, tents, gasoline speeders for use on railway lines, besides making possible the cutting out of trails and the erection of telephone lines. In the coming year they expect to erect lookout stations on highest points throughout the territory and connect these up with telephones, so that as soon as any fire is discovered a large force of men may instantly be available.

That similar co-operation would be quite feasible on the part of lumbermen in the Ottawa Valley was the opinion expressed by Mr. Lawler. The lumber cut in the latter area is greater than in the St. Maurice Valley. At the present time J. R. Booth, W. C. Edwards Co., Hawkesbury Lumber Co, and other large concerns employ the fire rangers on licensed limits required of them by provincial enactments of both Ontario and Quebec. Smaller holders, however, are careless about fires and often the rangers are unable to prevent waste on account of the lack of a systematic combination of effort. The matter of linking together the limit holders in Ontario and Quebec is to be taken up actively by the Forestry Branch in co-operation with the forestry departments of the two provinces. Hon. Justice Allard, Minister of Lands, Forests and Mines for Quebec, has pledged his support to the scheme.—Mac.

IN MONTREAL.

Montreal, February 27, 1913.

(Correspondence of Pulp and Paper Magazine.)

Pulp and paper men from this province remain optimistic regarding the outlook. The recent Convention of Pulp and Paper Men in New York was made the occasion of a visit to the American metropolis by a large number of the leading Canadian paper manufacturers. This gave them an opportunity to discuss business relations between the two countries, the future demand, possible price changes full of optimism. While very little relating to the international relations of the two countries was discussed, the Canadian visitors had many opportunities of investigating conditions. According to reports, the Americans who attended the Convention were somewhat pessimistic regarding the outlook. It is significant that the expressed opinions of the Canadian visitors are full of optimism.

One result of the visit was the determination on the part of many of the local men to form a similar organization in Canada. One of the leading paper manufacturers, in speaking of this, said:

"Such an organization in Canada would do more for the industry than anything else. It would prove beneficial to the trade and to the country as a whole. The pulp and paper industry is one of the most important in the country at the present time and is yearly becoming more important. Canadians could not do better than 'take a leaf out of the Americans' book' and form an organization similar to that which has been established in the United States.

In this connection, different Canadian manufacturers repudiate the insinuations made by a certain paper journal published in New York. This particular paper held that a union of the Canadian pulp and paper men "would be detrimental to American interests." It claimed that such an organization would be a purely political one, and that Canadian paper men would simply combine to raise the price of paper to American buyers, and would use their organization generally to "squeeze" the American consumer. This is most emphatically denied by local pulp and paper men, who point out that there are stringent laws in Canada which have to deal with combines which act in restraint of trade. One of the penalties of breaking this law is the removal of the duty. This was done once some years ago when the duty on newspaper was reduced 10 per cent., and the offenders immediately brought to a sense of what they were doing. Such an organization would not in any sense be a political one, but would be a perfectly legitimate association, which had for its main object—the furtherance of the interests of the industry as a whole. It is very probable that something will result from the recent gathering in New York, as the Canadians who attended that meeting saw the benefits of such an organization.

The Riordon Pulp & Paper Company are making extensive additions to their mill at Hawkesbury, which will be completed by the first of April. The Company are enlarging their mill there by one-third, at a cost of over half a million dollars. They have added two 12½-ton digestors, which will increase their daily capacity by 30 tons, bringing their total daily output of unbleached fibre up to 130 tons. In addition, the Company expect that their new machinery and equipment will still further improve the quality of their pulp. They have put in a new steam plant, which consists of three Babcock & Wilcox boilers of 650 h. p. each. The Company will cook their pulp with superheated steam. Altogether the improvements made in the plant make it one of the most up-to-date and thoroughly equipped mills on the continent.

The Harmsworth & Reid Companies will not long have a monopoly of the pulp and paper business of Newfoundland if the plans of a group of wealthy Austrian capitalists materialize. Your correspondent learns that a number of wealthy Austrian capitalists, largely interested in pulp and paper propositions, will visit Newfoundland this spring for the purpose of buying up large pulp areas and establishing a large paper plant for the supplying of Austrian newspapers. According to present plans they will spend several million dollars.

The Laurentide Company have awarded the contract for the construction of their big power dam on the St. Maurice River to H. E. Talbot Company of Sault Ste. Marie. The dam is expected to develop in the neighborhood of 75,000 h. p., which the Company will sell in Montreal and other industrial centres. This entry of the Company into the power field has had much to do with the strength of the stock, as the profits from this power scheme are expected to be in the neighborhood of $10 per h.p.—R.

NEWFOUNDLAND.

(Correspondence of Pulp and Paper Magazine.)

Montreal, February 28, 1913.

Mr. W. H. Taylor, for many years connected with the Crown Department of the Newfoundland Government, has been in Montreal recently. In the course of an interview, he discussed the development of the pulp, paper and lumber industries in the Ancient Colony.

Mr. Taylor is of the opinion that the future of these industries is extremely bright. Following the Lord Northcliffe venture, the Albert E. Reed Company, of London, England, purchased some 1,250 square miles. Another large mill is being started on the Gander River by a United States Company, who own 550 square miles, while a still additional project is under way at Deer Lake. This is also owned by an American company, the area comprising 540 square miles. Another British company, known as the Bay du Nord Corporation, are planning to build a large paper mill and a number of lumber mills to handle the pulp and timber on their 600 square miles. The Northcliffe mill has been in operation three years. Reed & Co. commenced business in 1911, while all the remainder came in last year. Mr. Taylor contends that Newfoundland pulp will produce one-sixth more paper per cord than any other pulp, and at the same time the supply is practically inexhaustible. He makes the interesting statement that "50 per cent. of the Northcliffe pulp is made out of wood that has been burned over." Altogether, he is very optimistic regarding the future of the Island.

The Wayagamack Pulp & Paper Company of Three Rivers will commence shipping paper to Australia and New Zealand the end of this month. The company is now operating the first unit of their present capacity.—R.

ALBERT E. REED & CO., LIMITED.

Special to Pulp and Paper Magazine.

London, February 24, 1913.

For three days William Deacon's Bank, Limited, of London, were authorized by the North of England Trustee Debenture and Assets Corporation, Ltd., on

behalf of themselves and their co-purchasers, Sir Edward Partington (Managing Director of the Kellner-Partington Paper Pulp Co., Ltd.) and Messrs. Lawson and Ormrod, of Stock Exchange Buildings, Manchester, to invite subscriptions at 95 per cent. for £100,000 (about $400,300) of Five and a Half per cent First Mortgage Debenture stock (part of a total authorized issue of £150,000) of Albert E. Reed & Co. (Newfoundland), Ltd. The interest on and the annual sinking fund payments to redeem the stock were unconditionally granted by Albert E. Reed & Co., Ltd., of England, who are engaged in the paper industry as manufacturers. The Debenture stock is secured by trust deeds creating a specific first mortgage to the trustees for the Debenture stockholders of the freehold land, buildings and fixed machinery and fixed plant of Albert E. Reed & Co (Newfoundland), Ltd., at Bishops Falls, Newfoundland, and a floating charge as therein defined upon the residue of that Company's undertaking and assets present and future. The Debenture stock, if not previously paid off, is to be redeemed on 31st December, 1938, at a premium of 2 per cent. A cumulative sinking fund of 2 per cent. per annum, commencing on the 31st December, 1913, is to be created and paid annually to the trustees for the Debenture stockholders. The sinking fund payments are to be applied in purchasing stock at not exceeding 102, or, if the stock cannot be purchased at that price in redeeming stock by drawings at 102. Any Debenture stock so redeemed or purchased shall be cancelled and shall not be reissued. The stock may also be redeemed by the Newfoundland Company in whole or in part at 102 at any time on six months' notice, any partial redemptions being by drawings. In the case of the winding-up of the Newfoundland Company before 31st December, 1938, any outstanding stock is to be paid off at 102. The subscription lists, needless to say, were only open a few days when they were closed fully subscribed to.

The prospectus of Albert E. Reed & Co. (Newfoundland), Ltd., which has reached your correspondent, contains rather an interesting letter from the pen of Albert E. Reed, during the course of which he points out that:

"The Newfoundland Company has acquired 3,952 acres of freehold land on the banks of the Exploits River at Bishops Falls, situated about 10 miles from the Bay of Exploits on the East Coast of Newfoundland. The Company holds or controls timber licenses having over 90 years to run, and covering a total area of over 90 years to run, and covering a total area of over 800 square miles. The water power development at Bishops Falls has been carried out entirely in reinforced concrete, and includes a dam of 800 feet long and a power-house of 13,600 h. p. capacity. Turbines of 11,900 h. p., which is more than sufficient for the production of 140 tons (of 2,000 lbs.) of dry mechanical pulp per day, have already been installed. Mill buildings have been erected adjoining the dam and power-house, and are also constructed almost entirely of reinforced concrete, and are of the most substantial character. The whole of the works have been designed by Mr. Geo. F. Hardy, of New York, the well-known consulting engineer and specialist in pulp and paper mill construction. At present the manufacture is confined to pulp, but in planning the pulp mill ample power and space have been reserved for the addition of a paper mill. The Newfoundland Company holds one-quarter interest in a railway 22 miles in length, which connects Grand Falls and Bishops Falls with the shipping port of Botwood, distant about 11 miles from Bishops Falls, where vessels of 10,000 tons can lie alongside. The Company has also built a townsite on its freehold land at Bishops Falls, so as to provide accommodation for officials and operators engaged on the property. Over 86 per cent. of the £318,751 issued share capital of the Company has been subscribed, and is held by Albert E. Reed and Company, Limited, and the balance by myself and friends. The mills commenced running in the spring of 1911, and are now producing about 100 tons (of 2,000 lbs.) of pulp per day. All the buildings and part of the machinery for increasing the production to 140 tons (of 2,000 lbs.) per day have already been erected, and it is proposed to complete the installation during the present year. I am of opinion that when the mill is working at its full capacity of 140 tons (of 2,000 lbs.) of pulp per day the net profits will not be less than £30,000 per annum. The capital to be provided by the issue of £160,000 Debenture stock will be sufficient to provide the funds necessary for completing the whole pulp installation. With the £100,000 purchased by you, the issue of the whole of the £150,000 Debenture stock is now assured to the company."

Albert E. Reed & Co. (Newfoundland), Ltd., was formed by Albert E. Reed & Co., Ltd., of London, for the purposes of pulp and paper manufacture, in 1907.

It was in 1903 that Albert E. Reed & Co., Ltd., of London, was formed, and since that year the growth of the firm may be gauged by the following certified results:

1904	£ 23,631	10	2
1905	24,099	14	8
1906	30,058	9	5
1907	34,354	6	11
1908	40,114	4	4
1909	33,809	15	2
1910	29,005	17	10
1911	43,094	5	9
1912	48,540	9	6
	£306,708	13	9

These profits have been arrived at after charging depreciation amounting to £159,950 7s 4d, and interest on all Debentures and Loans. The Dividend paid to the Ordinary Shareholders for each of the last five years has been 10 per cent. The share capital issued and paid up on 31st March, 1912, was:—

5½ per cent. Cumulative Preference Shares	£218,000	0	0
Ordinary Shares	150,000	0	0
	£368,000	0	0
4½ per cent First Mortgage Debenture Stock	£100,000	0	0
Loans against Security	£90,954	17	10

Now, in regard to Albert E. Reed & Co. (Newfoundland), Ltd., the issued share capital as at the 30th April, 1912, was £318,751, all of which was subscribed and paid in cash. The capital outlay up to the same period was £342,718, included in which is the outlay on timber limits, railway sidings, township, etc., that Mr. Reed writes of. The price paid by the North of England Trustee Debenture and Asset Corporation, Ltd., Sir Edward Partington and the other co-purchasers, for the £100,000 Debenture stock to Albert E. Reed & Co. (Newfoundland), Ltd., was 91 per cent, and they fixed the selling prices at 95.—B.

PULP AND PAPER NEWS

Don Valley Paper Mills have broken ground for their new extensions. Tenders are now in for a new 94-inch machine and other equipment, as well as the buildings. Mr.Dan. J. Albertson is the engineer. This mill will make high grade jute, etc., and not wrappings, as reported in the daily press.

* * * *

Wayagamack Pulp and Paper Co., Three Rivers, Quebec, placed orders with the Canadian Boving Co., Toronto, for two chippers.

* * * *

The Brompton Pulp & Paper Co. have purchased the timber limits of J. E. Laberge, near Lambton, Que. The 5,000 acres cost in the vicinity of $35,000.

* * * *

Hinde and Dauch will erect a six-cylinder board machine in Toronto. Tenders and specifications are already in hand, and the contract will be awarded in the course of a week or so.

* * * *

Mr. Robb, engineer for Bertrams, Limited, left England on the 28th for a three-months' trip through Canada. His headquarters here will be with their Canadian office, Chambers and Simpson, 152 Bay Street, Toronto.

* * * *

A pulp and paper mill will be erected at Enderby, B.C., and application from several eastern capitalists to use a certain amount of water on the Spallumcheen River has been made by J. J. Stele, of Vancouver, B. C. B.C.

* * * *

"We have never had so much snow in eastern British Columbia since I have been engaged in the lumber business," said Mr. McInnis. There is from 12 to 15 feet of snow in the timber, and it pretty nearly makes logging impossible."

* * * *

The Medicine Hat and Manitoba mills of the Alberta-Saskatchewan Paper and Straw Products Co. will cost approximately $250,000 each. Mr. Schaub, the president, has left this week for a month's trip through the south, on business.

* * * *

A company has been organized in London, Ont., to manufacture patent paper cartons. It will be known as the Canada Carton Co., Ltd. Among those interested are Alex. Woonton, E. H. Nelles, Dr. C. Brown and M. P. McDonagh.

* * * *

Among the clauses adopted by the Health Committee of Montreal this week, which has under consideration the revision of the sanitary regulations of Montreal was that printed paper be prohibited for use as wrapping paper for foodstuffs.

* * * *

Forty men have been set to work on the construction of a right of way from Iroquois Junction, on the Temiskaming & Northern Railway, to Iroquois Falls, where the new plant of the Abitibi Pulp & Paper Co. is to be erected during the summer.

* * * *

Premises in Ottawa occupied, among other firms, by the Lowe-Martin Printing Co. and W. R. Bernard, wholesale paper dealers, were damaged by fire—loss to the former $50,000, insured for $30,000, and to the latter $4,000, insured for $1,250.

* * * *

The new Bertram machine now starting at Edwin Crabtree & Sons, Joliette, is 100 in. wide and 65 ft. long. It has three sets of press rolls, one of which is granite, and 24 dryers. Bearings water-cooled and heavy construction throughout.

* * * *

The output of the saw mills of eastern British Columbia and Washington will be cut down to a serious extent the coming season by reason of the unprecedented fall of snow this winter, according to Malcolm McInnis, who has large mills at Crow's Nest.

* * * *

The Commerce Publishing Co., Ltd., Montreal, capital $40,000. To acquire, print and publish newspapers, books, magazines and to carry on a printing, engraving, bookbinding and publishing business. John Wilson Cook, K.C., and A. A. Magee, Montreal.

* * * *

Among the Canadians in New York during Convention week were Mr. J. Chahoon, and J. A. H. Acer, of Laurentide, Mr. F. H. Anson and Wm. Whyte of Abitibi, W. S. Boyd and H. S. Hofstra of Price Bros., and A. G. McIntyre of the Pulp and Paper Magazine.

* * * *

Standard Paper Box Company, Ltd., Montreal, Que. —Capital, $200,000. To manufacture, sell and deal in boxes of all kinds. Incorportors: Hubert Moisam Joseph Samson, of Quebec, Que., and Calixa N. Moisan and Stanislas Moisan and Joseph Adrien Moisan, of Montreal.

* * * *

A new paper consuming concern has been incorporated under Dominion charter in the Commerce Publishing Company of Montreal, which will acquire, edit, print and publish books, newspapers and other publications. The capital is $40,000. The headquarters will be at Montreal.

* * * *

A specially selected wood, which is cooked by special soda process and, after being washed and bleached, is used exclusively in feather weight paper. The Barber Paper and Coating Mills, of Georgetown, Ontario, report a large demand for this line. They are the only mills in Canada producing this kind of a sheet.

* * * *

Mr. R. O. Sweezey, who has recently accepted the general managership of the Montreal Engineering Co., Limited, has organized a most efficient timber cruising and forestry engineering department for the company. Several big forest surveys are about to be commenced for large lumbering and financial institutions.

* * * *

Ira Hill, sulphite superintendent of Price Bros., who was reported in our last issue dangerously ill, died last week. The firm claim he was over enthusiastic in getting the mill in running shape, and the strain overtaxed him. We extend our sympathy to the family, and to Price Bros., who have lost one of their most valuable men.

* * * *

The town of Dryden, Ont., will celebrate the opening of the Dryden Timber and Power Co.'s plant by a civic holiday and banquet, as the first manufacturers to turn wheels in the district. Mayors of adjoining towns will also be present and friends of the company. The whole event will be one fitting for such an occasion.

* * * *

According to a Quebec despatch, the Belgo-Canadian Pulp and Paper Co., of Shawinigan Falls, have pur-

chased from the Hon. J. S. Sharples and Messrs. Wm. Power and Calvin, of Garden Island, Ont., over 500 miles of timber limits, known as the Metabetchouan limits. The price paid for these limits is stated to be over $500,000.

* * * *

In addition 160 men are clearing the lots for the mills and the erection of a dam which will flood a considerable area of land and will greatly facilitate the company's operations. The Temiskaming & Northern Ontario Railway expect to have the branch line to the Falls completed by June, when the Abitibi Company will be about ready to begin operations. The number of men employed will be 500.

* * * *

The Albert E. Reid Company of Newfoundland, are offering £100,000 of 5½ per cent. first mortgage debentures at 95, the proceeds of which are to develop their Newfoundland pulp and paper properties. Despatches from Newfoundland indicate that the Ancient Colony is in a prosperous condition, and that not only the Albert E. Reid Company, but the Harmsworth's are finding business exceedingly brisk.

* * * *

The Dominion Railway Commission has appointed Prof. E. J. Zavitz, Provincial Forester of Ontario, Provincial Fire Inspector of the Board. Mr. W. J. Hall, chief of the forest protection branch of the Quebec Government, has been appointed to a similar position in that Province. It is understood that co-operation with the New Brunswick and Nova Scotia Governments will also be sought by the Railway Commission.

* * * *

Good progress is being made at the Powell River Pulp & Paper Company's plant at Powell River, B.C. Their first mill is now turning out one hundred tons of news print per day and their second mill, which will have a capacity of one hundred and fifty tons, will be finished at an early date. They are carefully conserving their timber and may be said to have a perpetual supply.

* * * *

The Interlake Tissue Mills started up on February 27th making an excellent sheet on the first run. The new Bertram machine, supplied by Chambers and Simpson, of Toronto, ran the first sheet into good paper. This firm and the makers of the machine are open to hearty congratulations for such a remarkable showing.

* * * *

Flax straw, which has formerly been regarded as waste and burned, is about to be turned to profitable account in Canada. In the Goose Lake district of the Northwest, a plant has been erected by the Flax Decorating Company, of Rosetown, Sask., for the making of high-grade pulp and, at a moderate cost, it is contended that the straw can be converted into pulp, which will be shipped to England.

* * * *

A group of capitalists from Quebec, including Mr. O. Brouillard, M.P., and Mr. George W. Peacaud recently obtained control of some 200 miles of timber limits on the Metabetchouan River in Lake St. John district. The purchase also includes the taking over of three valuable power sites, capable of developing some 18,000 h.p. In addition, the new owners have acquired control of thirteen miles of railroad running from the Quebec and Lake St. John line to a proposed pulp site on the Metabetchouan River.

On March 9th next will be commenced the 108th anniversary of the foundation of the British and Foreign Bible Society, which was established for the sole purpose of translating and publishing the Bible in all languages of mankind. From this organization, which my well be described as the greatest publishing house in the world, have sprung several other societies having similar objects in view. It is fiitting therefore that the above date should be called Bible Sunday and used as an occasion to review the yearly advance of the Bible not only in circulation, but in its every-widening influence on the thought and literature of the times.

* * * *

Paper mills in Washington and California have appealed to the Treasury Department to rescind its order of some time ago admitting paper from British Columbia free of duty. This request follows the Treasury's recent refusal to abolish the duty on paper from Quebec, Canada, on the ground that Quebec had not removed export restrictions from wood and wood pulp, but only from paper. The Treasury has informed the western mills that if they prove conclusively that British Columbia would refuse to remove export restrictions from wood and wood pulp the duty on paper would be restored.

INCREASED PULPWOOD RATES.

Ottawa, February 27.

A judgment of far-reaching importance to the pulp and paper industries and railways in Eastern Canada and the United States was issued by the Railway Commission this morning, when the proposed increased rates on pulpwood from shipping points in Ontario, Quebec, and the Maritime Provinces to points in the Western States were declared reasonable, although their effective date was postponed until August 15 to allow of the carrying out of pending contracts.

The decision will be, in effect, an important conservation measure as regards Canada's forest resources, although the board in its order expressly states that it did not take this into account. Two judgments have been issued, the majority one written by Chief Commissioner Drayton and concurred in by Assistant Chief Commissioner Scott and Commissioners Mills and Goodeve; and the minority one, finding against the railways, by Commissioner McLean. As a result of the majority report the rates will be increased 1½ cents per 100 pounds, which will make every ton of paper manufactured therefrom in the American mills cost 56 cents more.

The judgment states: "The effect of the proposed increases is to add to the manufactured article in the American mill an extra cost of 56 cents for each ton of paper, the value of which is shown to be $42.50. It is argued that the increased rate creates an unjust and unfair discrimination on the American buyer. It is also argued, however, that the ultimate sufferers will not be the buyers, dealers or traders, but the producers, which satisfactorily removes any loss from the American buyer. Arguments have been advanced, practically on the line of conservation of the country's resources, on the proposition that it is much better for Canada that the pulpwood should be used in it and the like. In my view the board has nothing to do with such considerations at all."

QUESTIONS AND ANSWERS

Readers are invited to send in answers for publication.

1. How much kraft is imported from Great Britain?
2. How much book paper is imported from Great Britain?
3. What is the difference in cost of production of sulphate in Canada and Sweden?

PULP AND PAPER MARKETS

TORONTO MARKETS.

Paper.

News (rolls) $42 to $45, according to quantity.
News (sheet) $45 to $50, according to quantity.
Book papers (carload) No. 3, 4¼c. to 4¾c.
Book paper (broken lots) No. 3, 4¼c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2, 5c. to 5¾c.
Book papers (carload) No. 1, 5c. to 6¼c.
Book papers (broken lots) No. 1, 6¾c.
Writings 4½c. to 7½c.
Bonds, 10c. to 18c.
Sulphite Bond, 6½c. to 8½c.
Fibre, 3¼c. to 4c.
Manilla B., 2¾c. to 3c.
Manilla No. 2, 3c. to 3½c.
Manilla No. 1, 3¼c. to 4¼c.
Kraft, 4c. to 4¾c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $48 to $49, delivered in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.60 to $1.65.
Mixed shavings, 55c.
White blanks, 85c. to 87½c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 85c.
No. 1 book stock, 85c. to 90c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.10.
No. 1 print manillas, 60c.
Folded news, 50c.
Over issues, 55c.
No. 1 clean mixed paper, 42½c. to 47½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.75.
Ordinary satinets, 87½c.
Floc. satinets, 97½c.

MONTREAL MARKETS.

Prices for all lines of pulp and paper remain about stationary. The demand from Canadian sources, from the United States and from other countries all remain very good. The most noticeable improvement is in ground wood, which has been in a somewhat unsatisfactory condition. The makers of talc expect to reap somewhat of a harvest owing to the scarcity of china clay. Importers and manufacturers of the latter commodity state that it is extremely hard to get, and the probabilities are that there will be something approaching a famine in connection with this before the summer is over.

The following are the prices for paper, pulp and paper stock, f.o.b. Montreal:

Paper.

News, $41 to $43, delivered in United States.
News, $41 to $42 for large orders, $44 to $46 for small orders.
Newsprint, sheet, $46 to $50 at mill.
Book papers, carload lots, No. 3, 4¼c. to 4¾c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3c. to 3¼c.
Broken lots, No. 2, 5¼c. to 5½c.
Carload lots, No. 1, 5½c. to 6¼c.
Broken lots, No. 1, 6c. to 6¾c.

Wrappings.

Fibre, 3¾c. to 4c.
No 2 manilla, 3½c.
No. 1 manilla, 3½c. to 4¼c.
Kraft, 4c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.70 to $1.85.
No. 1 soft white shavings, $1.60 to $1.70.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50c. to 60c.
White blanks, 85c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c. to 55c.
Manila envelope cuttings, $1.05 to $1.10.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 50c.
Crushed news, 45c.
Crushed news—
Good mixed paper, 40c. to 42½c.
Old white cotton, $2.50 to $2.75.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.45 to $3.55.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.50 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.50 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.25.
New light flannelettes, $3.75 to $4.25.
Flock satinents roofing stock, $1.00.
Ordinary satinets, 85c.
Tailors' sweepings, 65c. to 70c.

Pulp.

Ground wood (at mill), $15 to $15.50.
Sulphite, No. 1 unbleached, $47 to $49, delivered in United States.
Sulphite, $43 to $46, delivered in Canada.
Sulphite (Bleached), $51 to $53.

NEW YORK MARKETS.

Special to Pulp and Paper Magazine.

New York, February 28, 1913.

The local sulphite market is characterized by a very strong tendency, both in domestic and imported brands. There is an exceptionally good inquiry for strong imported unbleached, but the supply is decidedly limited and only a few lots here and there are procurable. A few offerings of easy bleaching are being made at 2.45c. ex dock, New York, which appears that the makers abroad have small quantities on hand, but are unwilling to dispose of them except at their own prices. Reports from Scandinavia show that mills are in a pretty well sold up

condition, and under these circumstances they can afford to be independent. Although bleached sulphite is scare, small supplies can always be found if one is willing to meet the high prevailing prices.

Sulphate and Kraft pulps are in strong inquiry and mills making same report their output pretty well taken care of for the remainder of this year. Prices are reflecting a very strong tendency and a further advance is looked for daily. A few spot lots were reported on the local docks during the past week, but, generally speaking, the local market is devoid of accumulations. Domestic krafts and sulphates also are very scarce and supplies are mostly sold up for the next twelve months. The same is the case with domestic sulphites.

During the past ten days one of the biggest Canadian paper manufacturers visited the local trade and endeavored to secure 500 tons of sulphite, but was unsuccessful. However, it is understood that this supply was contracted for in other sections.

Foreign bleached sulphite rules firm at 3.10 to 2.25c. ex dock for No. 1, and 3.00 to 3.10c. ex dock for No. 2. Unbleached remains steady at 2.20 to 2.30c. ex dock for No. 1, and 2.05 to 2.15c. ex dock for No. 2. Easy bleaching is quoted at 2.30 to 2.45c. ex dock, while kraft is maintained at 2.00 to 2.20c.

Locally, domestic sulphites are quoted at 3.00 to 3.15c. for bleached, and 2.15 to 2.30c. for unbleached, delivered.

The supply of mechanical ground wood pulp in the United States is very heavy at present. Water conditions are normally good and mills are grinding to about half capacity. Grinders have suffered slightly of late from anchor ice, but the temporary curtailments have had no effect on the market. Competition is decidedly keen when one enters the market, and though prices are quoted on a basis $16 per short ton for No. 1 and $14 for No. 2, these prices are subject to shading if the business looks alluring. Movement at present is confined to supplying supplies on regular contracts, and reports from different sections show that there is very little additional business being transacted.

THE BRITISH MARKETS.

(Special Reports to Pulp and Paper Magazine.)

London, February 28, 1913.

The British paper industry is enjoying a busy period, and all the mills are working full capacity. How long this state of things will continue cannot at present be predicted; but, at all events, if the progress that is at present being made should work out until the end of next December, it may be taken for granted that 1913 will go down to posterity as a record year. The good percentages that mills are paying on the past year's and half-year's profits are healthy signs of the industry, and efforts are now being made to speed up to top levels. There is only one drawback in the paper trade in the United Kingdom to-day, and that is the heavy cost of production. Were it not for this fact the percentages on some of the mill shares would have excelled all previous records. Coal is dear, railway charges have increased, taxation (by local and Government bodies) has advanced, and sulphite, sulphate and mechanical pulps are a shade on the higher side for purchasing. All these factors tend to increase the burden of the manufacturer—though he has full and plenty in the way of orders to execute—and in common with other countries he has at the last moment realized that his customers must pay the inevitable increased price, despite foreign competition and the cheap grades of papers that flood the market. British paper in London to-day is, therefore, going at a slightly advanced price compared with this time last year, and the demand is good.

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During January printings and writings on reels were imported to the extent of £95,016 (an increase of £2,853 over January, 1912), and of this total Newfoundland contributed £8,570 (compared with £9,743 in January, 1912). Sweden was the biggest exporter to the British ports. In printings and writings not on reels, the total for last month was £86,194, as against £81,295 for the same month in 1912. Paper hangings reached £21,044 (compared with £22,032 in January, 1912. The grand total of the imports of paper, which includes the foregoing along with strawboard, wrappings, etc., is £611,699—an increase of £25,237 over January in last year. Turning to the export trade, the United Kingdom shipped writings in January to the extent of £35,788 (compared with £42,536 in January, 1912), and of this amount the exports to Canada reached £1,241 (compared with £860 in January, 1912 and £1,020 in 1911). Australia, where Canadian trade is reported to have received a check, is the United Kingdom's best customer for writings and one of the best for printings. In January, also, the exports of printings were £177,004 (as against £150,850 in January, 1912), and Canada received £14,858 worth, an inrrease of over £2,000 on January last year. The grand total of the exports for the past month, including wrappings, coated papers, bonds, etc., was £334,884—an increase of £20,080 over January in last year. It will be seen from these figures that Canada received from the British markets in paper and bonds, etc.—the finished articles—close on £20,000 worth during January last, whilst Canada's exports to the United Kingdom are comparatively small.

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The British market for sulphite and sulphate is very firm, and the same may apply to soda pulp. Quotations are about as follows:—

Sulphite, bleached	$56.30 to $60.00
Sulphite, easy bleaching	47.00 to 47.50
Sulphite, news (strong quality)	37.75 to 45.00
Soda, unbleached (first quality)	37.00 to 40.00

* * * *

In January last the United Kingdom imported chemical wood pulp to the amount of £259,605, as against £337,339 for January, 1912, and £216,404 for January, 1911. Mechanical wood pulp was imported to the extent of £102,265, an increase of £9,521 over the corresponding in 1912, and £44,222 over January, 1911. Norway (£63,804) and Sweden (£31,508) were the biggest suppliers to the British markets, whilst Canada's quota was £767, as against £4,274 in January, 1912 and £211 in January, 1911. The grand total of the imports of wood pulp in January was £361,870, a decrease of £68,213 when compared with January last year. Canada and other countries, except Sweden and Norway, are responsible for the decline in supplies.

* * * *

There is a good enquiry for mechanical wood pulp, and prices are inclined to be a little easier. It is reported in London that Lancashire mills have placed some good contracts with suppliers. Quotations are about as follows:—

Pine, 50 per cent. moist, prompt delivery	$10.30 to $10.40
Pine, dry, prompt delivery	23.50 to 23.60

* * * *

Paper-makers' materials in the chemical trade are unchanged in prices, and a good demand is reported owing to the rush of work at the paper mills. Bleaching powder is still in great request and the stocks at the works are light—softwood casks now stand at about $24.30 f.o.r. at works. In alkalis there has lately been a good enquiry and trade is now going apace, ammonia alkali being quoted from $10.45 upwards according to requirements. Caustic soda is also passing with good freedom.

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The China clay trade is bristling with orders, and makers are still unable to cope with the demand. Reports from Cornwall show that facilities are being pushed forward to cope with the export trade. At present the port of Towey is congested with shipping waiting for cargoes for the continental and American markets. The prices for the highest grade in bulk range from $3 to $7 per ton f.o.b. Cornwall. In January

the export trade reached £71,077 (compared with £49,934 in January, 1912, and £65,640 in January, 1911).

* * * *

There is a slight improvement to report in the rag and paper stock market, and all fears of a shortage are alleviated by the brisk collections that have been effected during the past three weeks. Continental stocks are still low and, like the market in England, all grades are going at high prices. Business within the past few days has become steadier. The exports of rags and paper stock to Canada for the four weeks ending February 15 from England reached 90 tons. In January rags were imported into the United Kingdom to the extent of £105,366, whilst the export trade amounted to £18,254.

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In exports a fairly good demand exists and more business is being effected. Prices are unchanged. No supplies are yet to hand from Tripoli, where exports were suspended when war broke out between Italy and Turkey. The great demand at present is all on the side of Africa.

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Since writing the foregoing note on chemical wood pulps, your correspondent is informed that sellers are asking increased prices, in some cases equal to $1 and more, on all sulphites and sodas. The rumor of a probable shortage and low stocks, no doubt are responsible for the turn of events.

MR. BECKER ON ENGLISH MARKETS.

London, February 20, 1913.

The Editor Pulp and Paper Magazine:

Mechanical Pulp.—At the beginning of last year high prices were ruling and as much as $9.65 (2,000 lbs.) f.o.b. was paid. This level was not maintained, but, after some fluctuation, the market settled down at a fairly good price, chiefly owing to heavy forward buying. At the close of the open water season, however, some of the Baltic pulpmakers found that they had waited too long and precipitated a collapse of the market, which then went as low as $7.60 f.o.b. At the present time, the market for prompt and fairly prompt shipment is weak and has a downward tendency, and there are large stocks of unsold pulp in Sweden in spite of the abnormally late closing of the Baltic. For forward delivery, prices are still firm at about $8.15 to $8.30 for Baltic pulps.

Chemical Pulp.—After a lengthy period of depression and low prices, a reaction has at last set in and a largely increased demand has caused quite abnormal prices to be reached.

For forward shipment, up to $35.84 is being now asked for strong sulphite, and $2.00 more for easy bleaching. Soda pulps have not responded to the market quite so well as sulphite, but $32.30 to $30.00 is paid for the easy bleaching qualities and about $2.00 less for kraft pulp.

A large proportion of the new demand for chemical pulps has come from the States and South America, and it is interesting to note that, at the same time, there was an almost complete cessation of shipments of ground wood to those countries.

Paper Trade.—All qualities of papers were sold last year at prices which left the mills here good profits, as can be seen from the very healthy condition of nearly all the English paper mills. While the commoner papers and browns were in good demand at fair prices, it was cheafly the better printings and esparto papers which felt the advantage of the higher prices.

The average price of "news" was about 1¼d. less, 15 per cent. to 17½ per cent., and foreign makes were, as usual, somewhat cheaper.

Manchester, Eng.—Pulp boards have declined by 8,991 bundles for 1911, the total being 14,349 bundles. On the other hand paper boards have increased over 1911 by 8,244 bundles, the total for 1912 being 10,268 bundles.

ARGENTINE.

Mr. H .R. Ponsette, Canadian Trade Commissioner, writes:

Under "wood" it will be seen that nearly 15,000 metric tons of woodpulp have been imported this year for manufacturing paper. This is not for print paper, but for other classes.

The Dominion should be able to cut into the trade in wheelbarrows, but up to the present no interest has been taken in the various inquiries which have been forwarded from this office.

The business in washing machines is only in its infancy. As time goes on and these domestic aids become better known, it is likely that they will have an increasing sale.

Furniture shows a trifling falling off for the nine months, but next year should show at least 25 per cent. increase on the present figures. If Canadian furniture factories should be interested in this market, it would undoubtedly prove a lucrative source of income to them for an indefinite time in the future.

References have been made in previous reports to the large trade in print paper, and it will be seen from the figures shown below, that in nine months the trade has increased by nearly 1,600 metric tons. If Canadian factories were able to take care of this trade, they should have little difficulty in selling from 5,000 to 10,000 tons a year to this republic.

Some Canadian carbon paper has been coming into this market, and the praiseworthy enterprise of the manufacturers has every prospect of success.

Imports.

Paper and Paper Articles.

Carbon Paper, kilos.	11,423	+	2,051	29,080
News Paper, id.	21,139,299	+	1,595,532	1,268,357
Writing Paper, id	2,260,451	—	355,332	326,067
Sanitary Paper, id.	178,699	+	26,924	53,600
Fly Paper, id.	85,664	+	55,764	17,133
Paper Bags, id.	94,189	+	10,231	32,965
Cardboard Boxes, id.	79,456	+	12,310	52,128
Paste Boards, cases	784	+	119	78,009
Paper Serviettes, kilos	18,791	—	11,417	7,516

SCANDANAVIAN MARKETS.

Mr. C. E. Sontum, Consular Agent at Christiana, reports:

"According to an article in Farmand, the mechanical woodpulp market is very quiet. Buyers hold back, although large quantities are as yet uncovered, in an effort to press the prices down. The closing of the Baltic, which will no doubt result from the strong cold of the last few days, may, perhaps, bring some more activity in the market. Chemical is quiet, but prices keep steady. A new wood-pulp mill has recently been started on the west coast of Norway. It is calculated for a production of 10,000 tons mechanical pulp per year.

The Swedish Pulp Market Firm.

According to the January number of Svensk Export, the woodpulp market is as firm as at any time during 1912. Very little of the stock is still unsold, and the larger part of this year's production is sold at very favorable prices. The prospects are the best for the producers, and it is claimed that the demand will in 1913 far exceed the production. What is still unsold will no doubt command very high prices, and the buyers will be obliged to accept the terms of the sellers. On the other hand the expenses have increased considerably, and especially the raw material is continually rising at the same time as the goods are getting thinner.

Cellulose is exceptionally firm, and the stocks on hand are very small. Mechanical is in the moment not so much in demand; but no doubt the high price of cellulose will act stimulating also on the mechanical pulp.

The Swedish quotations are at present per ton f.o.b:

Mechanical wet, white	$8.80	to	$ 9.60
Mechanical dry, white	19.73	to	23.47
Sulphite, prime	40.00	to	41.37
Sulphate, prime, strong	38.00	to	39.47
Sulphate, light bleached, ordinary	36.00	to	37.33
Sulphate, strong	36.00	to	38.67

The wood trade market is quiet. Buyers seem to be keeping back, possibly as a result of the uncertainty regarding freight rates. There are many inquiries, but as far as known very few of them have resulted in sales. Prices, however, keep steady.

Large Norwegian Saw-Mill Closed Down.

The owners of the "Sanne and Soli Brug," near the city of Fredrikstad, Norway, have decided to close down their mill. The mill, which has been employing about one hundred hands, was bought by the present owners about fifteen years ago for $200,000, but it has been running for more than 160 years. The principal reason for the closing down now is reported to be want of raw material, as the woods are exhausted in the neighborhood.

JAPAN PAPER TRADE.

The editor of the Japan Trade Review, a paper published at Tokyo, in Japanese, Chinese and English, calls our attention to the following article in a recent issue:

In the past, we have seen the first new era opened in this industry at the time of remarkable economical expansion of Japan which followed the China-Japanese War, and the second new epoch marked after the war with Russia. The establishment of a number of paper mills on a grand scale, such as those of Tomokomai and Ebetsu, each producing no less than 6,000,000 to 7,000,000 lbs. per month, coupled by the general tendency of enormous increase of demand at home and in China, cannot but bring about once more a new phase on the third time. The enormous swell in the outputs of our home mills is evident in the fact that in the last five years an increase of 57 per cent. has been effected.

The chief supplying countries to Japan are Germany, Great Britain, Sweden, Belgium, and Austria.

It goes without saying that printings occupy the foremost position in the paper market of Japan of which the newspaper descriptions amount to one-third of the annual total output at home. Printings also amount to one-third or four-sevenths of the aggregate of the sum of paper imports. As the result of the substitution of the tariff ad. val. for the specific tariff, the imported goods of superior quality belonging to this group, such as art paper, were lowered in the ratio of duty imposed upon, and this fact, coupled by the general increase of demand at home, is stimulating their trade. A similar tendency is observable also in the colored printings, there being no material difference between the duty of 0.9 sen per pound according to the new tariff, and the one per cent. of the former ad. valorem tariff.

This opens a very lucrative field for Canada paper-makers, chiefly new mills of British Columbia.

Editor Pulp and Paper Magazine:

Dear Sir,—Re your editorial on New Brunswick pulp wood policy, I think you might go farther to show the short-sightedness of that policy. A cord of pulp wood is about 600 feet, board measurement. This will give about one ton wood pulp manufactured at a cost of $9, say, a ton and sold for $17 a ton, thus giving a net profit of $8 a ton. On the other hand, lumber selling at $20 a thousand feet in very few circumstances costs less than $12 to $13 a thousand to manufacture. Then the net profit on 1000 feet (lumber) equals $8, and 1,000 (pulp) equals $13, or $5 per thousand feet of wood in favor of pulp.

Yours truly,

Montreal, Que. 'Canadian Well Wisher."
February 21, 1913.

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BRITISH TRADE NEWS.

Special to Pulp and Paper Magazine.

London, February 25, 1913.

The present state of the chemical wood pulp market in the United Kingdom is causing some alarm. Americans are making enquiries for requirements to cover the next two years, Scandinavia is reported to be on the brink of a shortage, and it only remains for Canada to come to the rescue. Just now the demand is very great, and the market very firm. Experts are of the opinion that a shortage is likely to take place at no distant date if things do not improve within the next month. This, of course, would be a serious matter, though a good many of the English and Scotch mills have a fair amount of supplies on hand. However, there is a tendency for higher prices for promptitude, and Canadian pulp exporter should at once give the British market a little attention for a short time. A rush of American enquiries are also reported in Norway and Sweden. With this threatened shortage comes complaints from dealers and a few agents of the treatment Scandinavian mills is doling out in regard to offers. It is alleged that Scandinavian producers are quibbling. They send out a definite offer of a lot of pulp to the English agent to dispose of, and when he does he cannot get the producer to give instant confirmation of the figures obtained. Perhaps the same lot of pulp is sold to another firm on the continent at a higher price, and the agent is consequently left in a ridiculous position with his English clients. Canada, amongst the agents, is always recognized to stick to a decent average price year in and year out—indeed, they rule Scandinavian quotations in England—but Scandinavian prices are like a weather-cock, hence complaints.

* * * *

The week-end stop question in the British paper mills has been advanced another stage, and it is hoped that all unpleasantness will be shortly settled. About 50 delegates from the mills in the northern section have met and considered an offer by the British Paper-makers Association (northern section). The position of affairs at present is: Machines to shut down on Saturdays not later than 10 p.m.; that all wires and felts, etc., shall be put on during the week; that no work be done before 5 a.m. on Monday mornings; that all day workers cease work at noon on Saturday; that all concessions be granted without a reduction in wages. If these terms are now finally agreed upon by the employers the workers will have won valuable concessions. Meantime the mills are kept very busy with orders, and it is interesting to know what affect a week-end stop would have on trade.

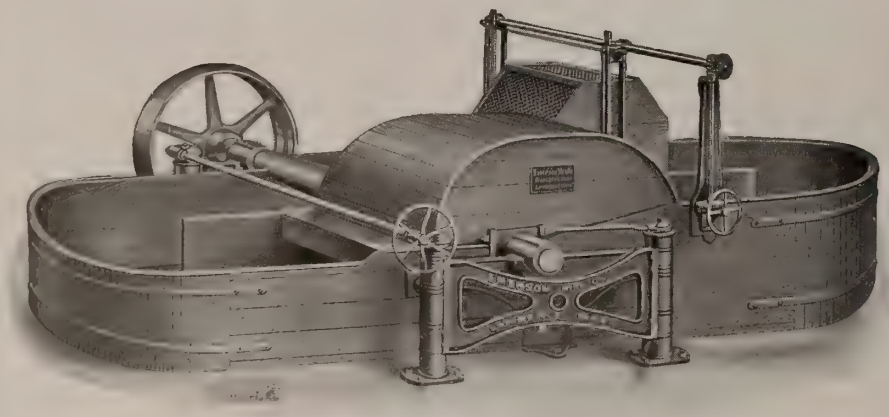
* * * *

The Grove Paper Mill Co., Ltd., (new mills) have declared a dividend of 2½ per cent., making 5 per cent. for the year.

* * * *

A. L. Griffiths, of O. Reich & Co., has joined the London selling staff of Price & Pierce, Ltd., the well-known wood pulp agents.

The Royal Paper Box Co. intends building an extension and adding another story to their present factory. It is said the company will go into the corset manufacturing business.



EMERSON MANUFACTURING COMPANY

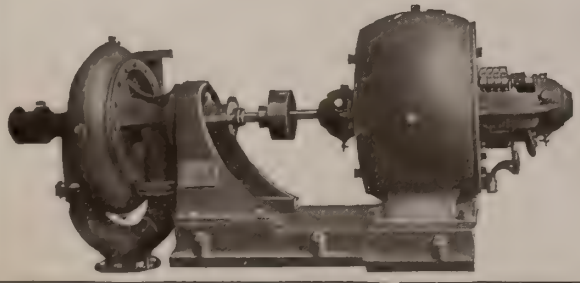
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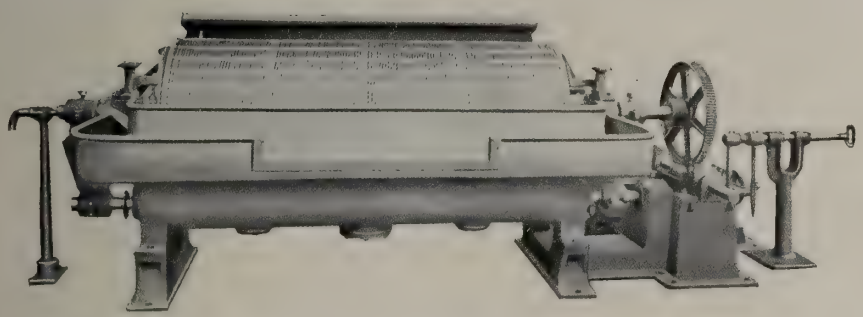
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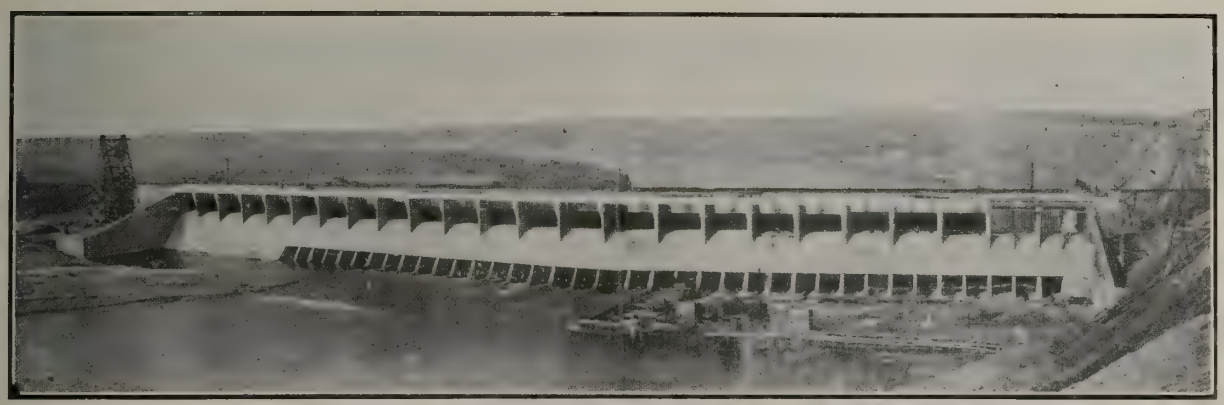


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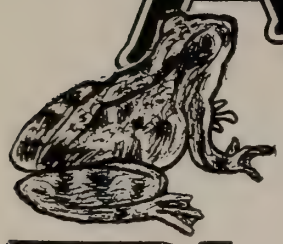


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Taylor, James, St. Francois Xavier St., Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
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Westbye, P. P., Peterboro, Can.

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Jeffrey Mfg. Co., Montreal, Can.

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Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Scales
Mardon, Alfred H., London, E., England.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Marx & Co., J., London, England.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York. Pa.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.

MILL SUPPLIES CONTINUED

Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines

Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste

Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines

Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C. & Co., Ltd., Craig St., Montreal, Que.

Kraft—

Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, J. C. & Co., Ltd., Montreal, Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—

McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—

Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—

Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,

Deputy Minister.

Department of the Interior, Ottawa,

December 20th, 1912.

PAPER MILLS CONTINUED

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson & Co., Ltd., J. C., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Richard & Co., Petit Pre, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson & Co., J. C., Montreal, Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C. & Co., Ltd., 700 Craig St, Montreal, Que.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Booth, J. R., Ottawa, Ont.
Ford, J. & Co., Port Neuf, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag—
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
Wilson, J. C. & Co., 242 Craig W., Montreal, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Tissue and Toilet—
Eddy Co. The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. & Co., 242 Craig W., Montreal, Que.

THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst,

Minister of Lands, Forests and Mines,

Toronto

PAPER MILLS CONTINUED

Wood and Pulp Board—

Booth, J. R., Ottawa.
Campbell Lumber Co., Weymouth, N.S.
Eddy Co., The E. B., Ltd., Hull, Que.
Gore Paper Mills, Dundas, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Wrapping—

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Scotch Fibre", "Invictus Fibre", Hercules Manilla", St. Francis Manilla", "Wave Crest Drug."
Crabtree & Sons, Edwin, Crabtree Mills, Que.
Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont .
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Montreal Paper Co., St. Bazile, Que.
News Pulp & Paper Co., Ltd., Montreal, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Strathcona Paper Co., Strathcona, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

PAPER MILL AGENTS AND COMMISSION MERCHANTS

Calgary, Alta.
Davis, W. D. & Co., 3rd St. W. and 7th Ave.
Tees & Persse.

Edmonton, Alta.
Tees & Persse.

Saskatoon, Alta.
Tees & Persse.

Vancouver, B.C.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.

Victoria, B.C.
Mitchell Bros., 8 Bastion.

Moose Jaw, Sask.
Tees & Persse.

Regina, Sask.
Tees & Persse.

Winnipeg, Man.
Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Douglas & Ratcliffe.
Hudson Paper Co.
Kilgour Bros.
Martin, John, Paper Co., Ltd., 319 William.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.

St. John, N.B.
Schofield Paper Co., Ltd., 26-30 Prince William.

Moncton, N.B.
Reid, F. P. & Co.

Halifax, N.S.
Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.

New Glasgow, N.S.
McGregor, R. & Co.

Kingston, Ont.
Hendry, J. A., 75 Princess.

Hamilton, Ont.
Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

Ottawa, Ont.
Barnard, W. R., 228 Albert.
Reid, C. De Wolf.

Port Arthur, Ont.
Tees & Persse.

Toronto, Ont.
Barber-Ellis Co., Ltd., 71 Wellington St. W.
Brown Bros., Ltd., 51 Wellington St. W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay St.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gain, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George
McNairn, J. H., 5 Jarvis.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Whyte, Alex., 64 Wellington St. W.
Wilkinson, E. H., Telephone Building.

Montreal, Que.
Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
Lloyd, Ed., Ltd., Eastern Townships Bank Building.
McFarlane, Son &Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Co., 138 McGill.

Quebec, Que.
Andrews, F. H. & Son, 64 St. Paul.
Reid, C. De Wolf, Herald Bldg.
Rolland, J. B. & Son, 36 St. Paul.

WANT AND FOR SALE

YOUNG MAN desires position, 28 years old, 10 years' practical experience one of leading book mills in U. S. A. Understands making orders and formulae for Beaters and Machines and seeing same put in execution; good on bulk, finishes, and colors. Can keep all mill records, stock and supplies. Highest references. Box 55, Pulp and Paper Magazine.

UNDER MANAGER.—Young man, 14 years' practical experience in English mill making long elephants, news, all-wood printings, cream laids, etc. Experienced mill chemist—testing of papers, fibres, etc. Highest references. Address H. C., c/o Pulp and Paper Magazine.

WANTED, immediately for new Sulphate of Soda Pulp Mill, experienced night foreman, Cooks and Chemical Recovery Room help. State experience and wages asked and give references. Apply D. L., Pulp and Paper Magazine.

WANTED—Thoroughly experienced and competent paper machine millwright for Canadian mill. Good position for right man. Apply with record of experience, age, salary expected and date can report. Box 54 Pulp and Paper Magazine.

FOR SALE—PAPER MILL SITE—3 acres—with buildings and dwelling; on Moira River, a little above Moira Paper Mills, Belleville, Ont.; price four thousand only, sacrificed to settle an estate. Apply Chas. Knees, Canifton, Ont.

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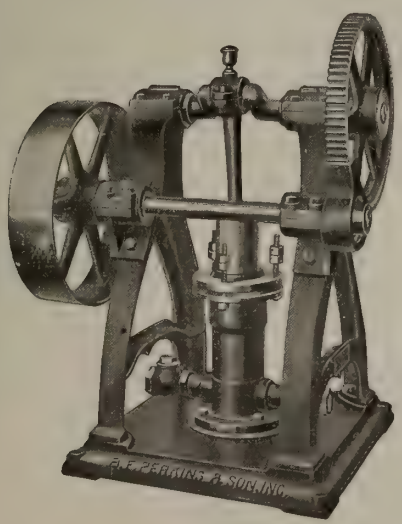
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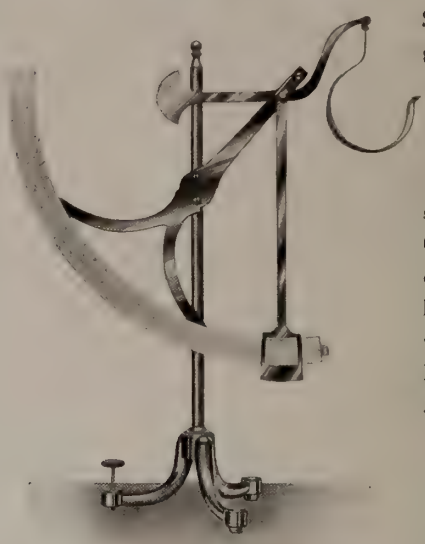
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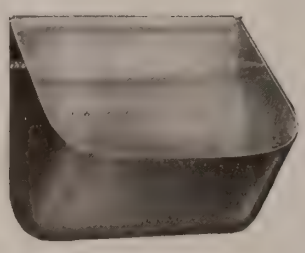
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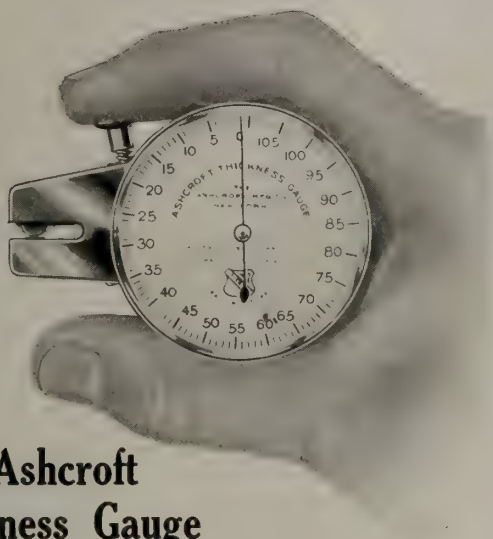
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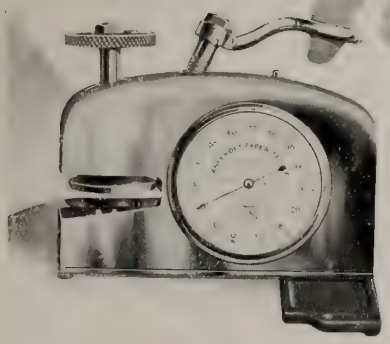


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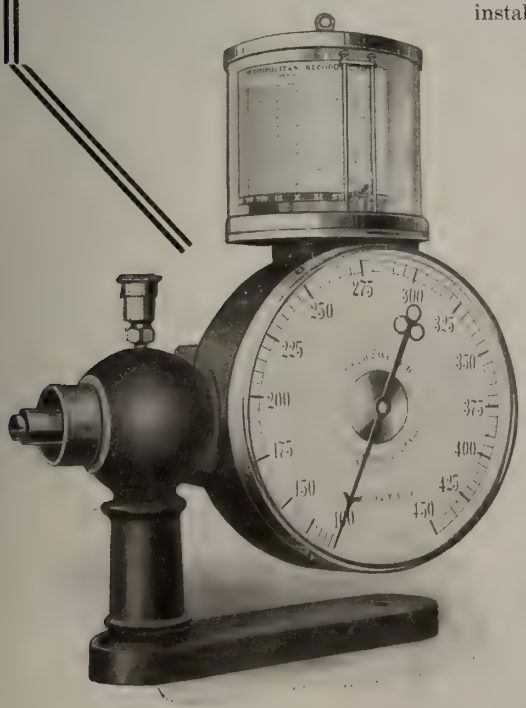
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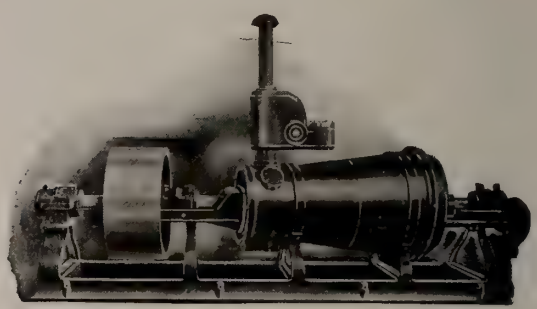
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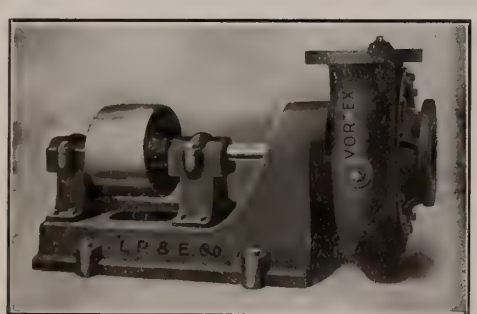
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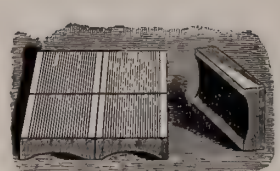
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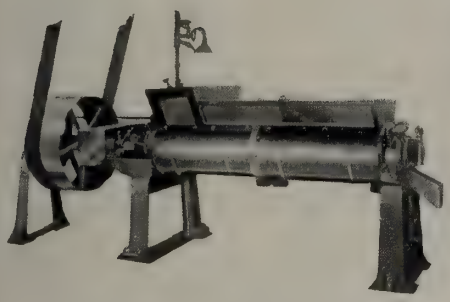
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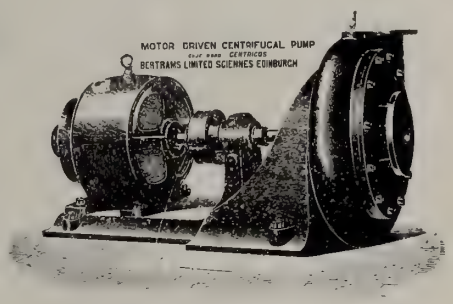
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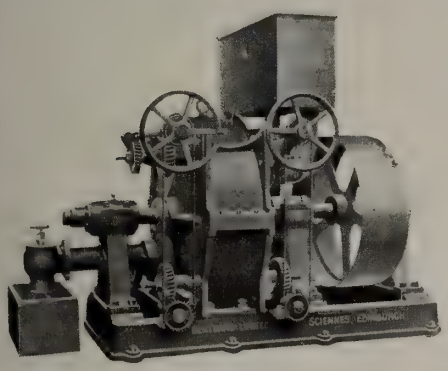


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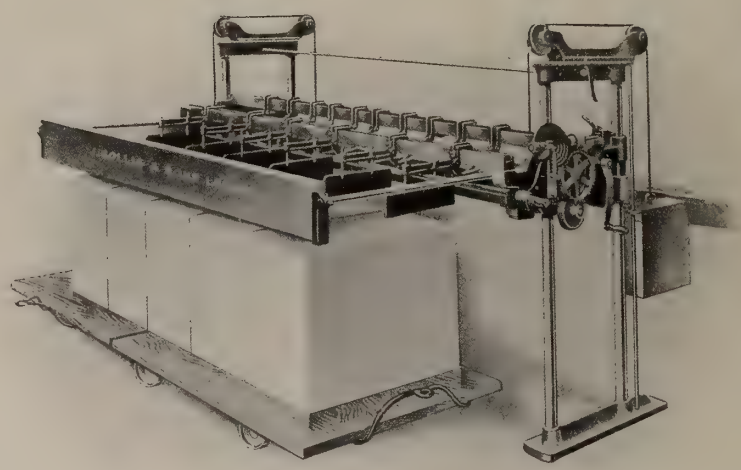
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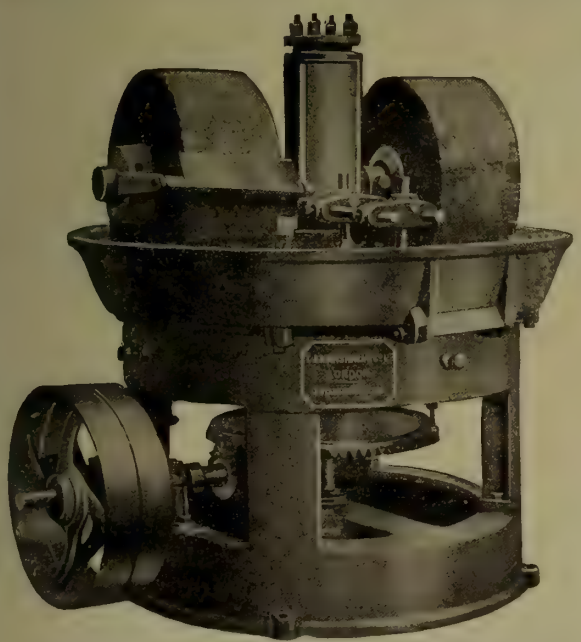
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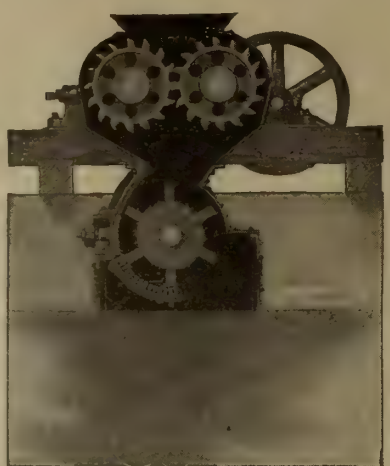
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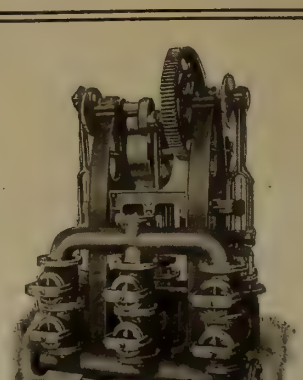
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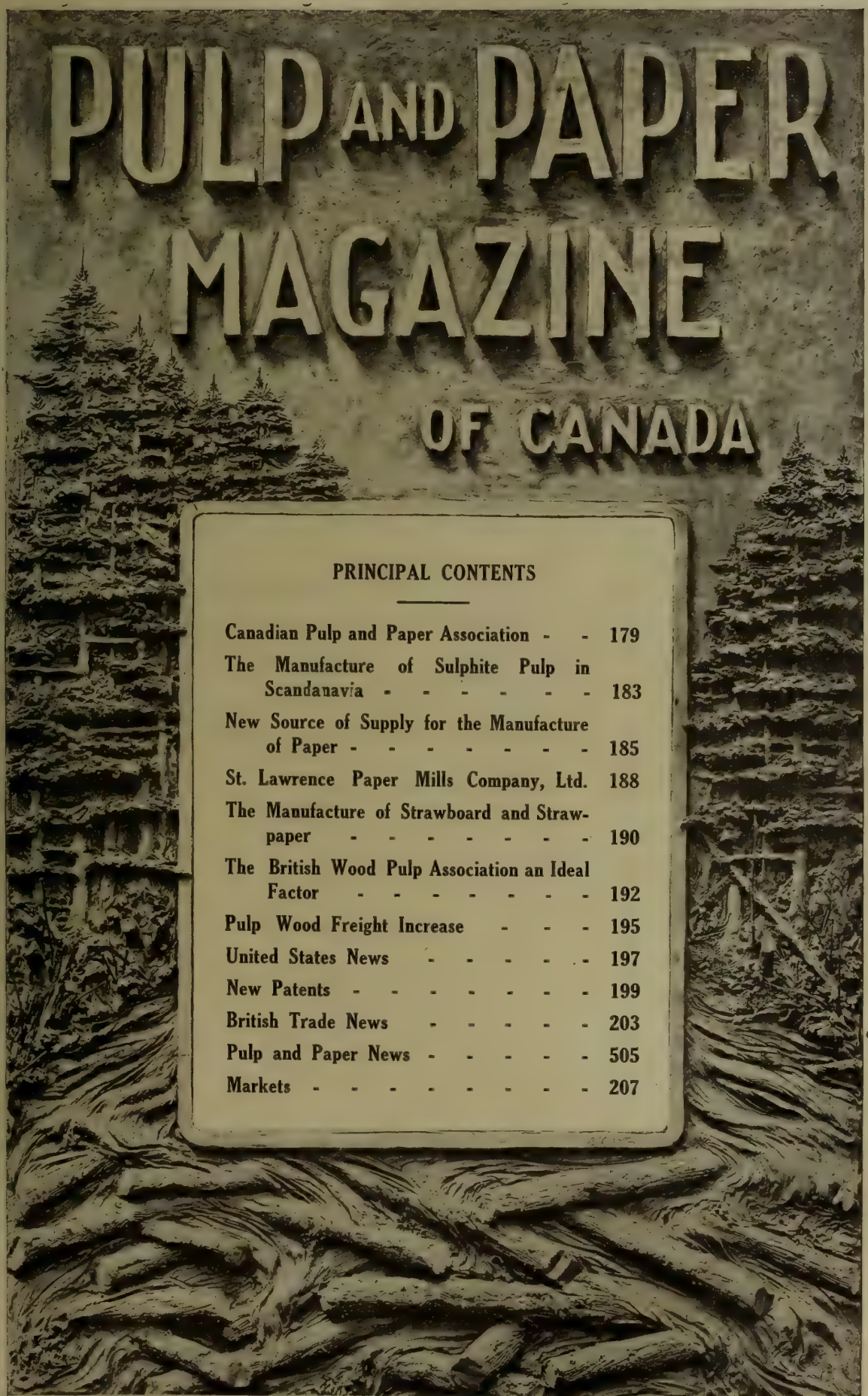
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VOL. XI. TORONTO, MARCH 15, 1913 No. 6

PULP AND PAPER MAGAZINE OF CANADA



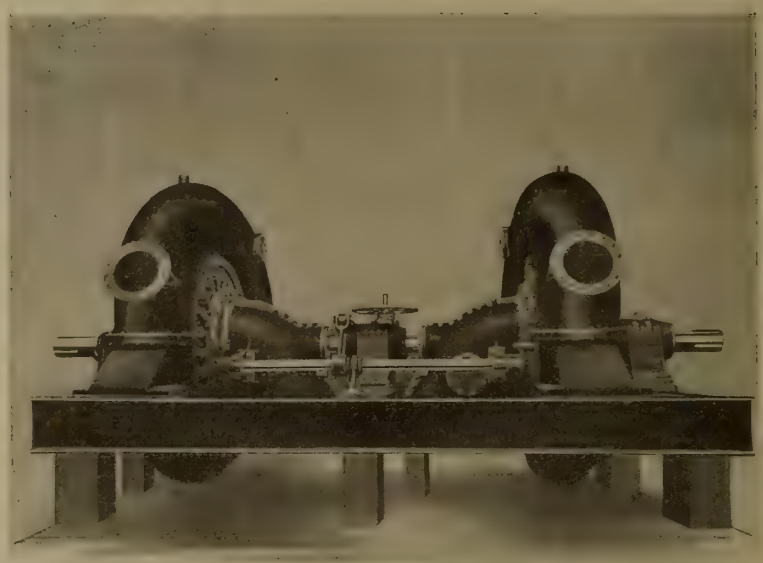
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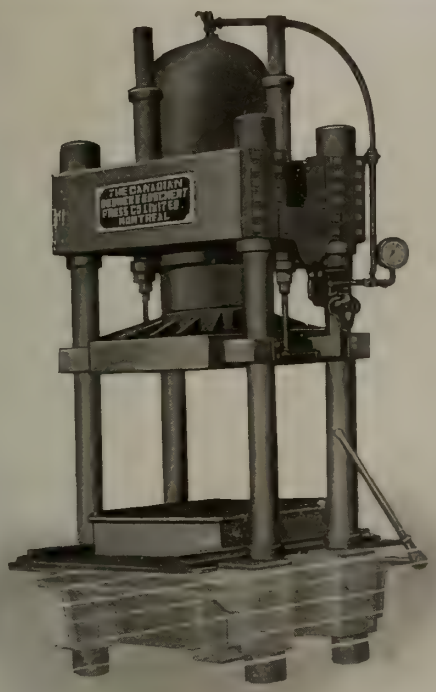
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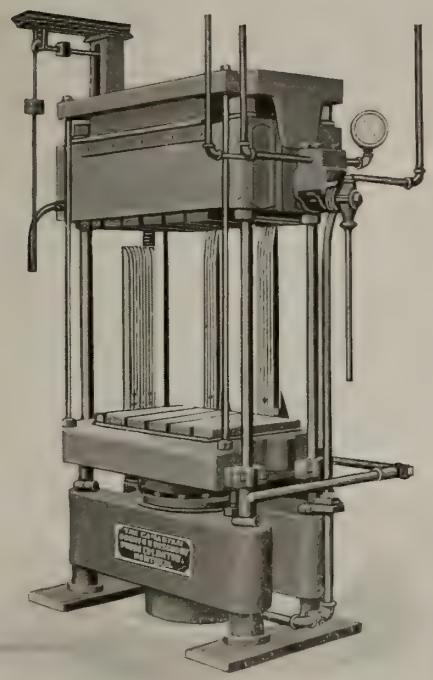
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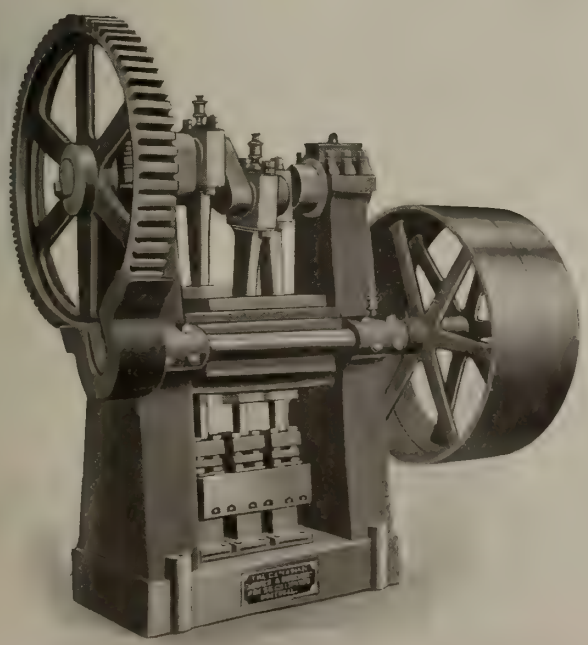
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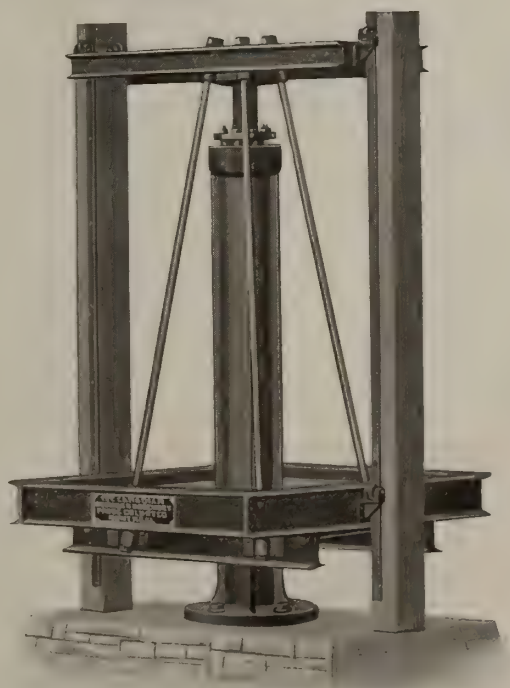
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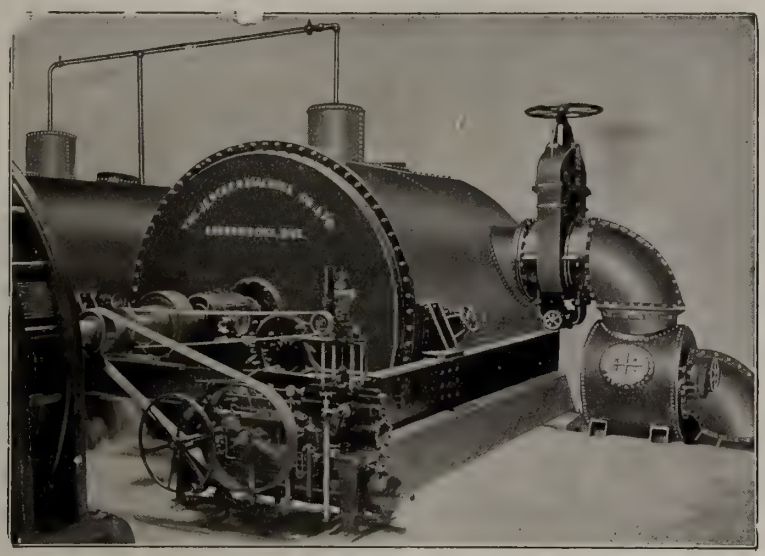
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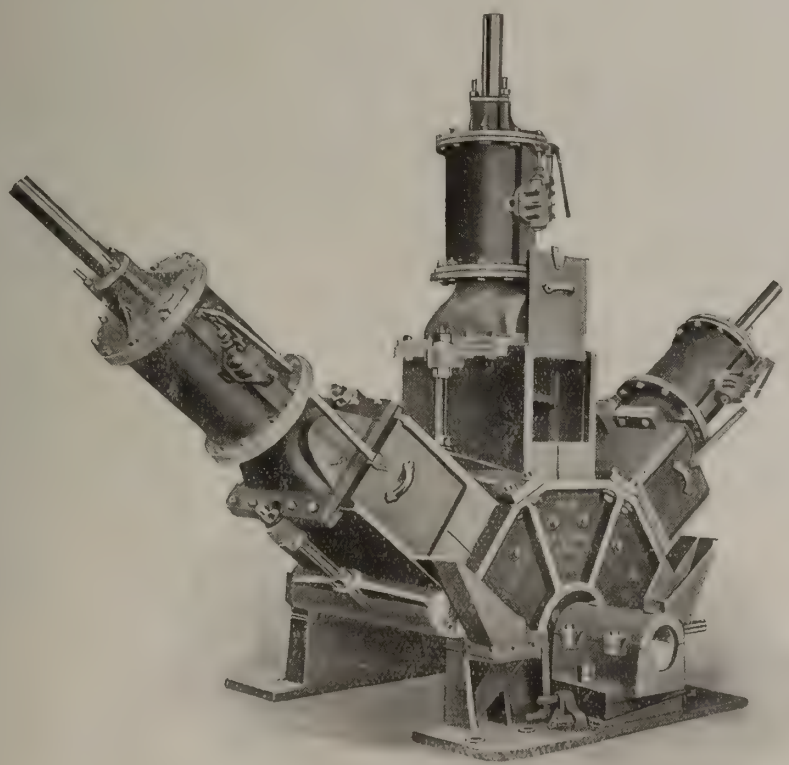
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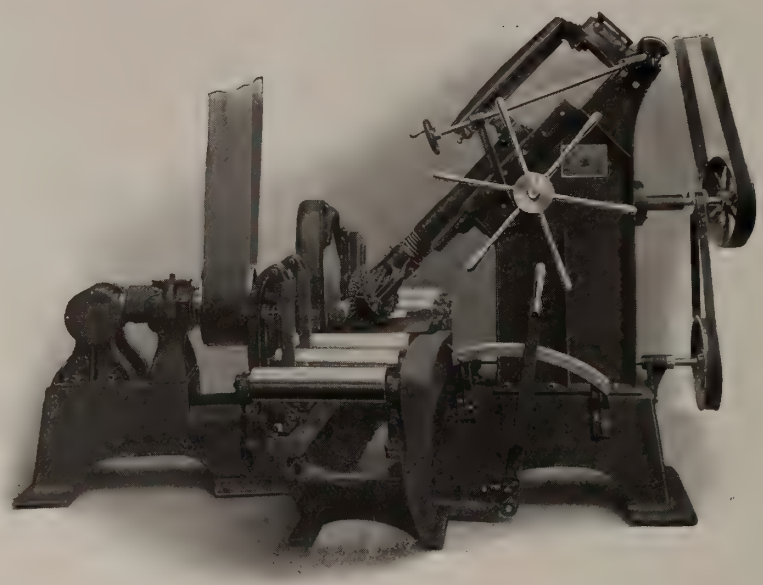
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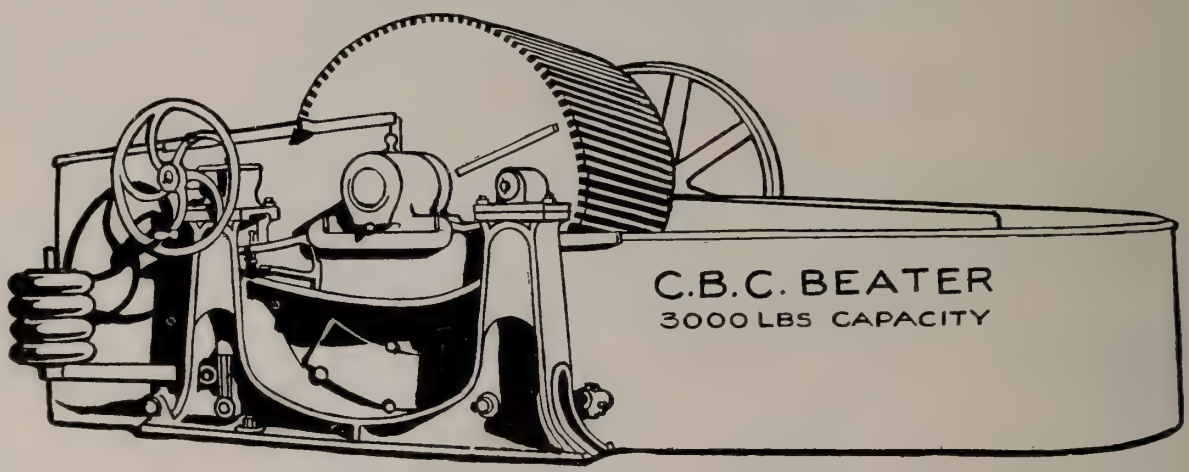
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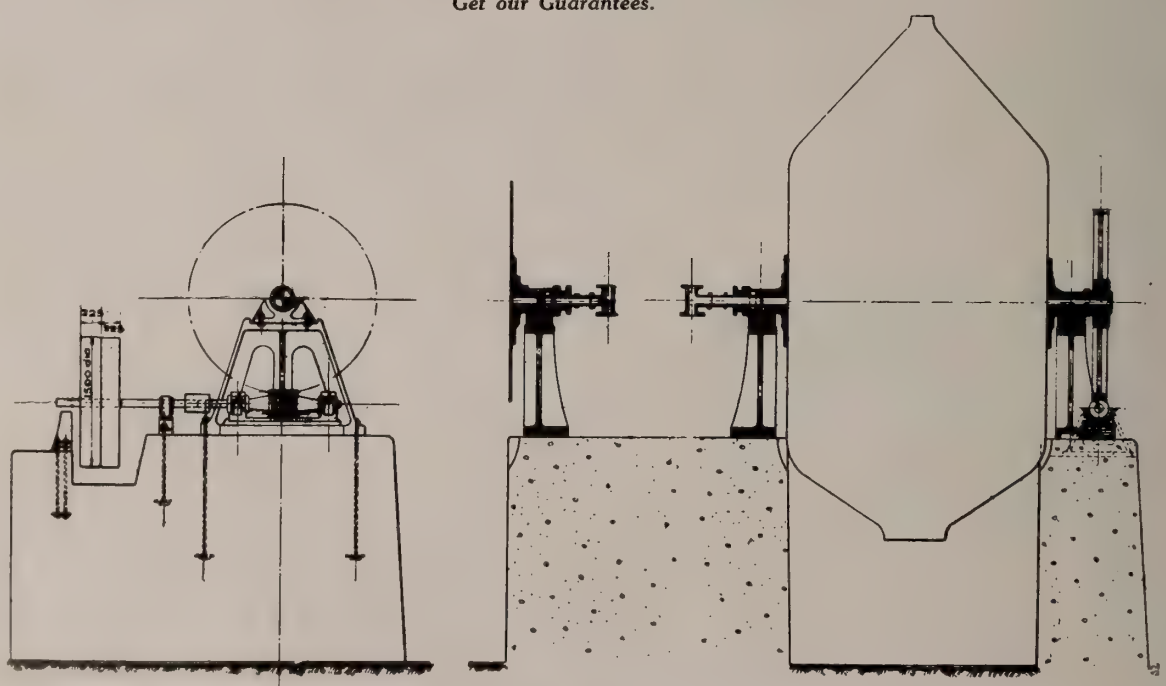
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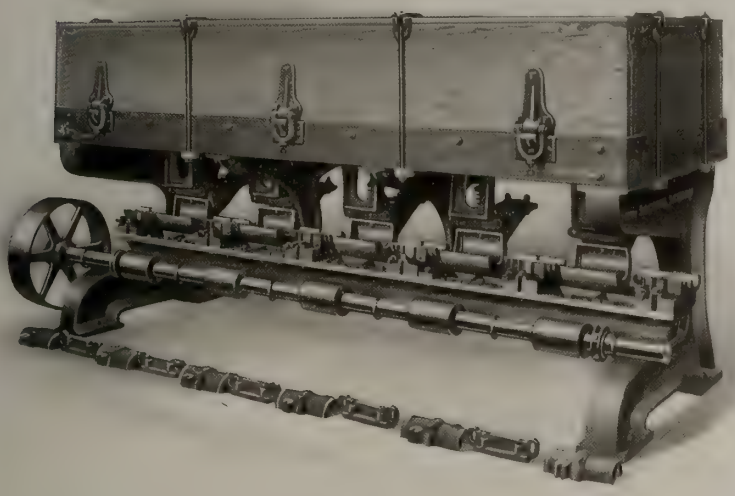
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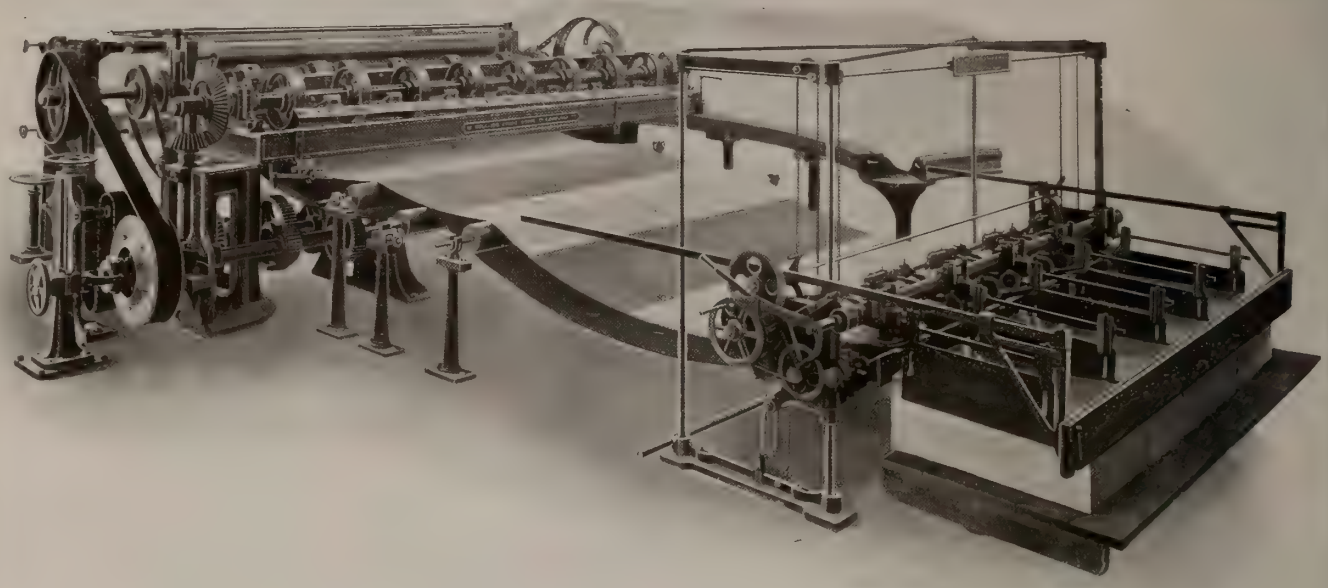
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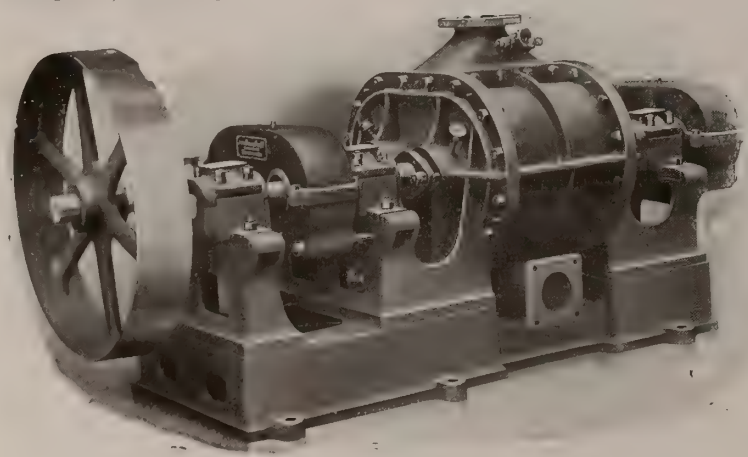
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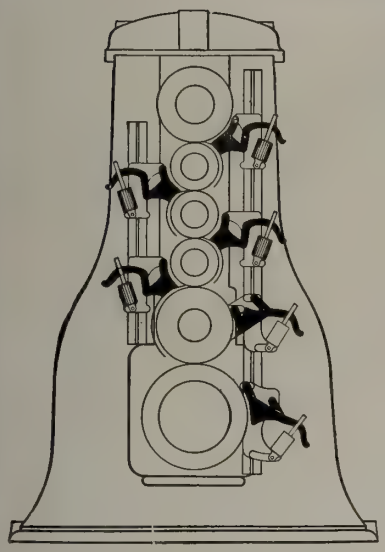
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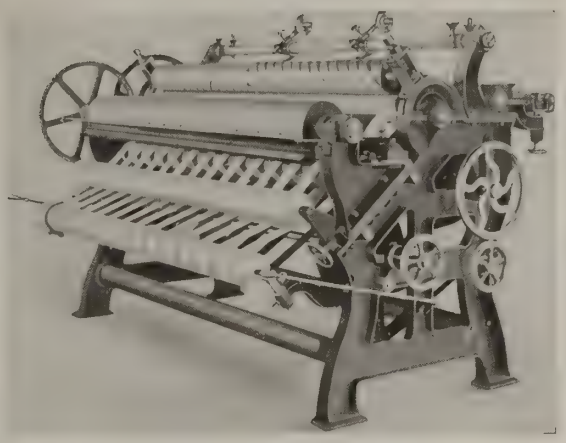
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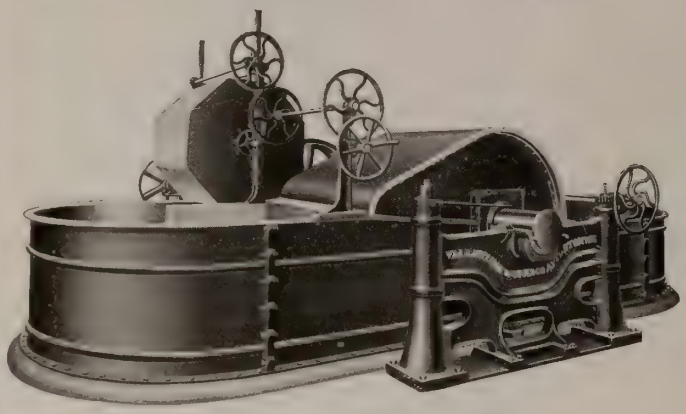
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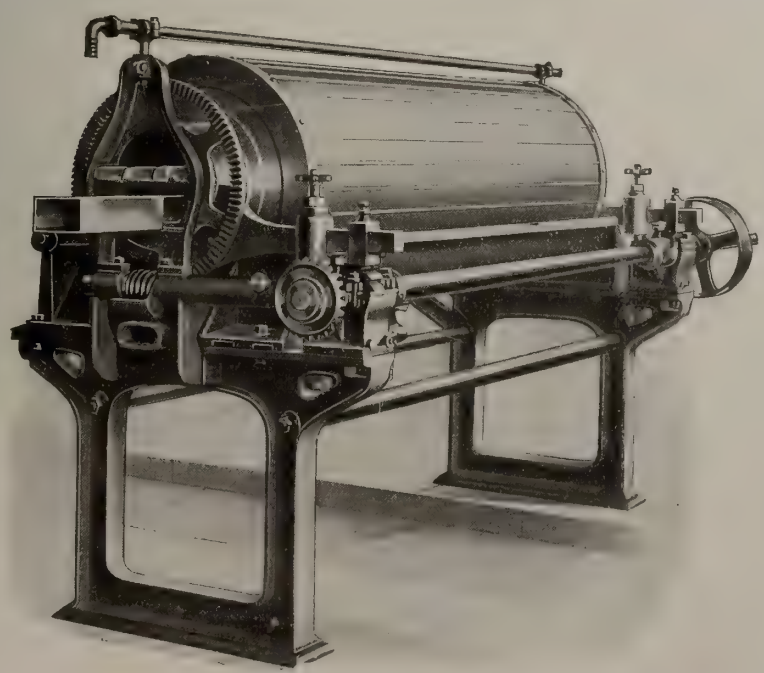
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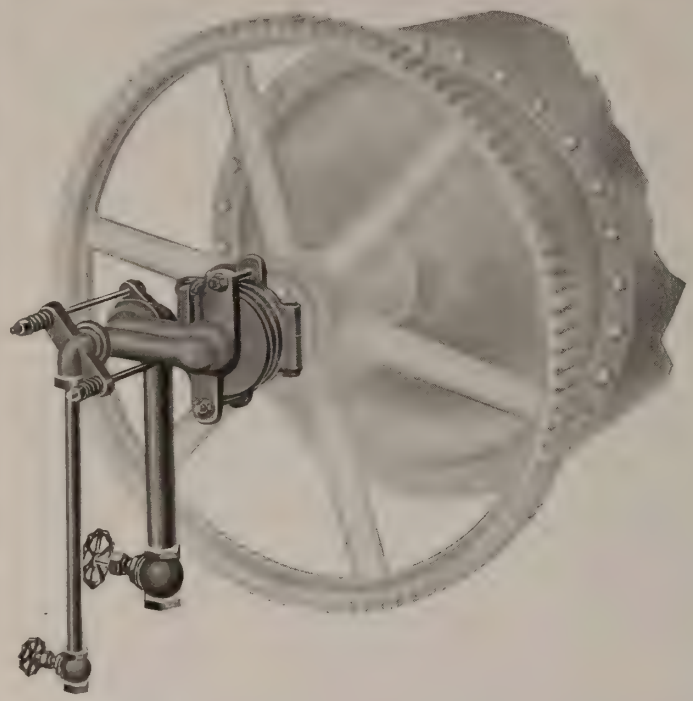
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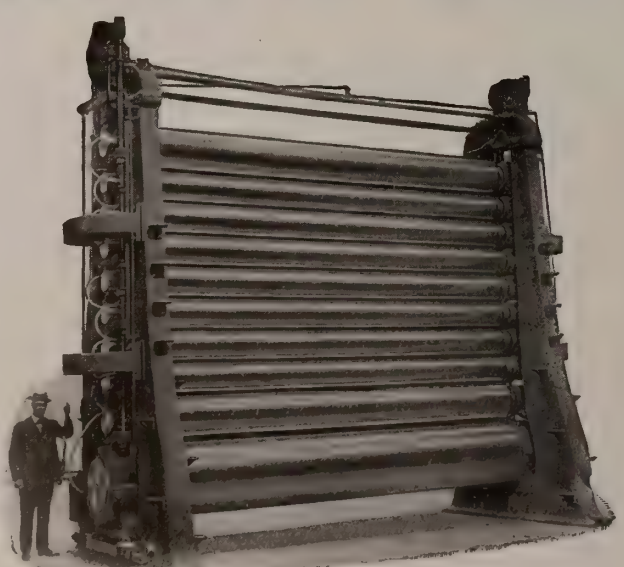
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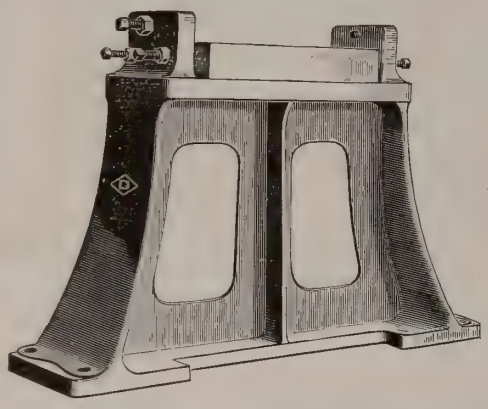
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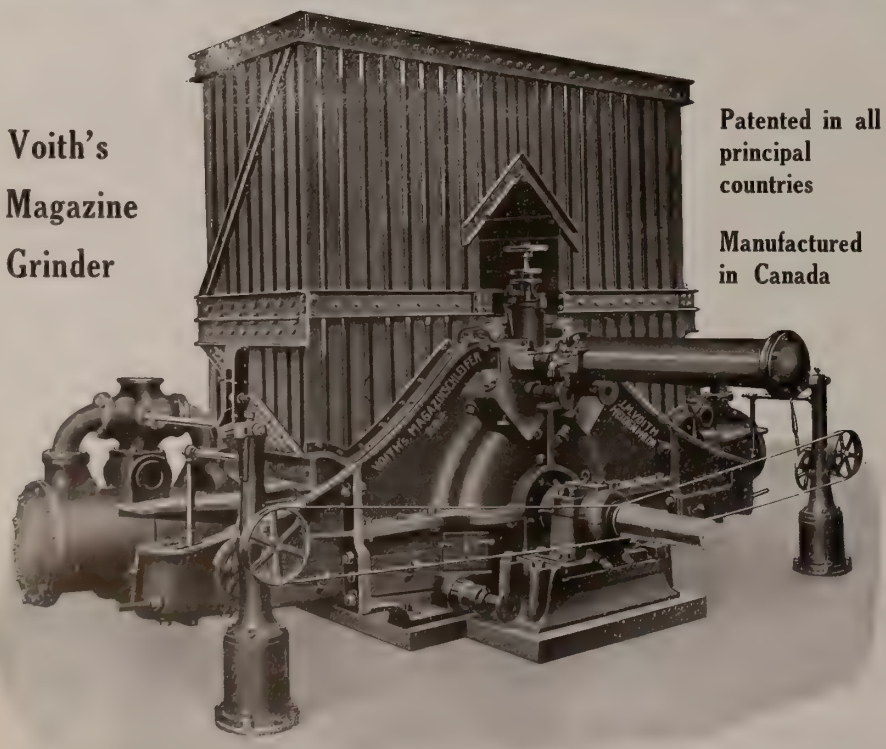
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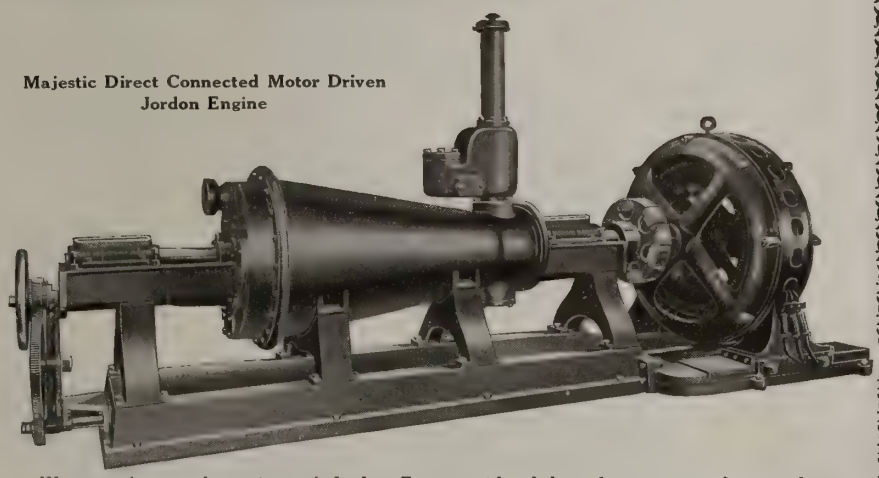
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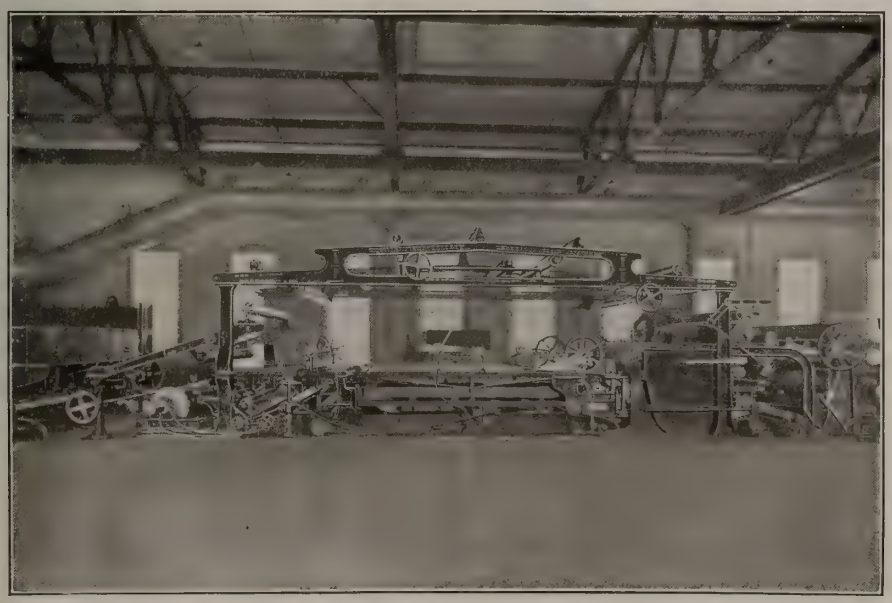
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The Pneumatic Save-All In Use



Here is a photograph of a Pneumatic Save-All, taken in a prominent Paper Mill. The picture is shown in the rough to indicate the exact conditions. The waste stock saved on the revolving pneumatic cylinder mold is seen sliding down the deflector plate to be collected and used over again. This stock, so saved, amounts to $500.00 a month. At this rate a Save-All pays for itself and for the cost of installing and running it for a year *within the first few weeks* of its operation! In this case the screen shown — although quite fine—(our No. 114 mesh) had been in use *one year* when the photograph was taken. This is a perfectly fair example.

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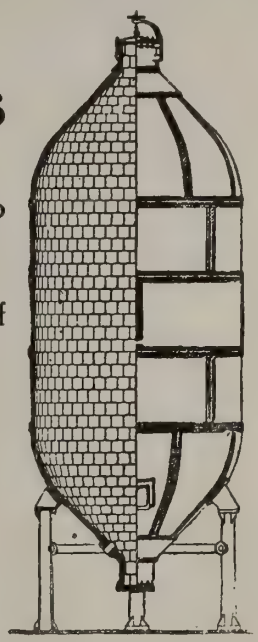
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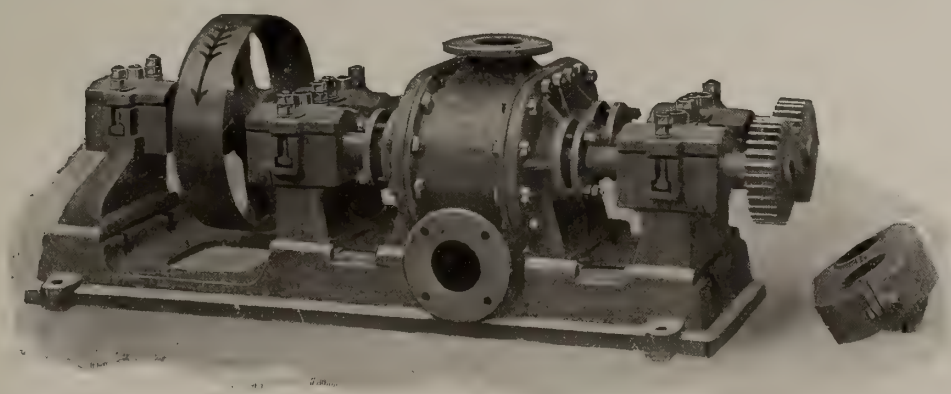
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Pulp and Paper Magazine

OF CANADA

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

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CANADIAN PULP AND PAPER ASSOCIATION

The proposal made by the Pulp and Paper Magazine in its issue of February 1st for the organizing of a thoroughly efficient and up-to-date association of pulp and paper manufacturers for the Dominion evidently voiced the universal feeling of the industry. From all parts of Canada came appreciative response and in many cases enthusiastic endorsation of the idea.

But it was early realized that this general recognition of the need for an Association in Canada would have to be crystallized into some practical, tangible form before such a body could take a shape to be of real service to the various branches of the industry. A meeting was called, therefore, in Toronto for Saturday, the 8th inst., at which about twenty-five gentlemen prominently connected with the pulp and paper trade and industry were present, representing the following companies: Spanish River Pulp & Paper Co., Barber Paper & Coating Mills, Riordan Pulp & Paper Co., Ltd., St. Lawrence Paper Mills, Ltd., Montrose Paper Mills Co., Don Valley Paper Co., Brompton Pulp & Paper Co., Laurentide Co., Ltd., Rolland Paper Co., Edwin Crabtree & Sons, Wayagamack Pulp & Paper Co., Howard Smith Paper Co., Abitibi Pulp & Paper Co., Dryden Timber & Power Co.

At this meeting, the subject was thoroughly threshed out, and it was the general concensus of opinion that such an association would at the present stage of development of the pulp and paper industry, be of very great value. There have been other associations in Canada, but the one proposed, it is needless to say, would work on totally different lines.

The possibilities of useful work for such an Association are almost unlimited and would grow as time goes on, but among them may be mentioned: the collection of facts and figures regarding manufacturing output and the opportunities in established or prospective markets; also regarding the precipitation of rain and snow in the chief manufacturing sections; the proper understanding of trade customs; the defence of the industry against unjust or discriminatory freight rates; the protection of forests; the vexed pulp wood question as it affects the various provinces and recent United States tariff legislation. Such an Association also could do a great deal in co-operating with the Government in its proposed establishment of forest products, laboratories, etc., from which every mill in the country would benefit.

Those present at the Toronto meeting engaged in a keen discussion of these and other points, and finally passed unanimously a resolution to the effect that such an Association was highly desirable and that a further meeting to complete its organization should be held in the Windsor Hotel, Montreal, on Wednesday, the 19th inst., where lunch will be served at 1 p.m.

The following gentlemen were appointed as a committee to lay before this meeting recommendations for constitutions, by-laws and a more detailed statement of the benefits to be attained by such an Association: Messrs. Geo. E. Challes, C. Howard Smith, G. A. Howell, I. H. Weldon, A. F. Cayford, F. J. Campbell, Howard Wilson, Geo. H. Meade, N. M. Jones, Geo. H. Millen, J. E. A. Dubuc, O. A. Porritt, and A. G. McIntyre (Secretary of the Committee, 243 Confederation Life Bldg., Toronto).

At this meeting it is expected that Mr. Arthur C. Hastings, President of the American Paper & Pulp Association; Judge C. F. Moore, its Secretary, and Mr. R. H. Campbell, Dominion Director of Forestry, will be present and give addresses.

It is particularly requested that all those connected with the pulp and paper industry will make a strong effort to be present at the Montreal meeting, so that all its various branches shall be properly represented.

BRITISH COLUMBIA FORESTRY AND TIMBER REGULATIONS

The timber situation in British Columbia is peculiarly interesting at the present time, inasmuch as new legislation of a protective character is before the Provincial Legislature and that the newly organized Forest Branch of the Department of Lands has just issued its first report. This organization is only six months old, and indeed, it is barely completed yet, but, judging from what has been accomplished already and from the plans now in course of being perfected, it bids fair to become a model forestry department for the continent. Naturally a large part of the report is devoted to a consideration of the ways and means for protecting against fire. Last year only 165 wardens were regularly employed, although during the most dangerous part of the season this number was augmented by 48 special patrolmen. More will, of course, have to be added, but it is gratifying to know that during the first season of the Forest Branch's work, the fires, while they numbered 347, were comparatively unimportant. The report, written by Chief Forester H. R. MacMillan, makes several important recommendations, which will no doubt be put into force as soon as the work of organizing is completed.

The Government's bill to amend the timber regulations is meeting with considerable opposition from the lumbering interests, which was perhaps to be expected. Briefly stated, it includes provision to double the stumpage charges from 50 cents to $1.00, the argument advanced by Hon. W. R. Ross, Minister of Lands, being that with the increase of population, the opening up of the Province by railroads, and the completion of the Panama Canal, the value of lumber will be so increased as to readily afford a higher revenue for the Government without hardship to the lumbermen. To which the latter replies that the higher prices for lumber by no means indicate greater profit to the cutter; also that higher stumpage rate have a tendency to cause timber holders to wait for higher values before cutting. Their contention is that what is needed is a stimulus rather than a drawback to present cutting, in view of the admission that British Columbia's annual growth of timber is five-fold of the annual cut, also that there are large areas in which the forest is over-ripe and in which natural decay is greater than annual growth.

In connection with British Columbia's timber policy it is interesting to note that paper manufacturers of the Western States are urging the United States Treasury Department to make a ruling similar to the one made recently in regard to Quebec's pulpwood restrictions and to prohibit the free import of pulp and paper made from provincial wood, for which a large British Columbia paper manufacturing concern recently gained permission.

GOING UP

The rapid rise in the price of pulp wood even during the last year has been so striking that the many manufacturers are asking the cause for such radical changes The ordinary answer of supply and demand is entirely erroneous, as an explanation in this connection.

A number of features have contributed to this new phase of pulp and paper manufacture. One party in the United States with 20,000 cords of rossed wood is this week asking $11.00 a cord F. O. B. cars. In Watertown, N. Y., wood is selling now at $12.50 which formerly sold, not more than two years ago, at slightly over $7.00. There is every indication that the general price throughout United States within the next four months will be $10.00 to $11.00 F. O. B. Cars. Such remarkable showing is extremely important to our interest on this side and urges us to seek the causes.

The main cause, is that the enormous advances in the price of the class of labor which is used in making wood, with the advances in the cost of running lumber camps, under the advanced prices for hay, oats, etc., and food supplies. A further circumstances, which should be viewed with keen apprehension by the trade, is the fact that throughout Eastern Canada, the Frenchman who is by training the best lumber-jack, probably in the world, is rapidly giving up his traditional vocation for employment in the smaller towns on construction and other activities. This is developing to such an alarming extent that several companies in these districts are feeling its effects. The withdrawal of men from such work who are by natural disposition and training the best suited, and substituting in their places men of about 60 per cent. their producing capacity, at a higher wage, must tend to increase the price of pulp wood to home and foreign consumers.

Last year American mills having a year's notice of the shortage of wood supply laid up heavily, and were only saved from serious difficulty, by the unprecedented water supply during the last sesson, which allowed them to grind up their surplus wood. At the same time the pulp wood market in Canada and United States is practically bare.

Recently it was imposible in Montreal to place an order for 500 cords at any price showing that the supply is extremely low. Against this it may be cited, there are in all mills heavy stocks of ground wood which will tend to lessen the demand for pulp wood. It has come to our attention, however, that one mill in New Hampshire, which had 9,000 tons on hand a few weeks ago, reduced this to 2,500 tons in three weeks. This shows how rapidly the surplus stock may be absorbed. As pointed out elsewhere the price of ground wood, gives

promise of a sharp advance in the next few months. Pulp wood promises to show even a more marked change.

There is every indication, that a wood famine, will be on hand, after a few months and mills will do well to consider this in making contracts for very long terms.

BOOM COMING FOR CANADIAN MECHANICAL

There is on every hand, striking ear marks of rapidly improving conditions in the ground wood and pulp wood markets. The tendency of trade, the activity of purchasing and sales managers, all encourage us to seek the reason for the optimism in this connection.

Prices will assuredly be very much better during next season than last or than they have been for a number of years. A number of circumstances have transpired to give the market this decided turn. One of the largest mills in Wisconsin, instead of having 80 per cent. of their wood in their yards to date have only 30 per cent. Similar, though not as acute, conditions are noticed in many of the largest American mills.

There is every assurance of a scarcity of pulp wood for next season. This winter has been remarkable for scarcity of snow throughout United States, Eastern Canada, Southern Ontario and Quebec. The result is that wood cannot be made in the bush and all firms are reporting short cuts. Further, the scarcity of snow will affect water conditions next season, so that grinding necessarily must be greatly reduced. The present season in this regard has been better than any for the last twenty years, but we prophesy the other extreme for the next.

The new government, coming into power in the United States, will also tend to strengthen to a considerable extent, the demand for print and ground wood. Operating against this, is the fact that all mills both in United States and Canada, have the heaviest stocks of their history. There is in all probability in Canada, at this writing, 60,000 tons of ground wood stocked up. This heavy stock will of course, tend to keep the market off to some extent, but we anticipate such an enormous demand that the present stock will be exhausted before the season progresses very far. It is our belief that all mills will do well to play the game on stocks for the next few months, even harder than has been done for the last.

Sulphite bleached and unbleached also shares to some extent the prospects of the mechanical market. This is most encouraging, considering the new mills opening in Canada during the next season and it will do much to strengthen the Canadian industry.

A FRAME UP

The brief upon the paper trade with Canada, mentioned in our editorial of March 1st, on the American Pulp and Paper Convention, was last week handed to the Ways and Means Committee at Washington as a protest from the American pulp and paper manufacturers.

As we pointed out at that time, and as Mr. Acer, of the Laurentide firm points out, in a despatch in our columns, this issue, that report looks very much like a frame up of the American manufacturers. The long list of new companies capitalized in Canada under the influence of section 2 out of the total of $152,000,000, only $14,000,000 are in any particular bona fide pulp and paper organizations. The others, with individual capitalizations as high as $15,000,000, are, in many instances, hardly even names, and frequently have not even a stick of timber, and in all cases have never turned a sod toward the erection of a pulp and paper mill. Such figures existing only in the mind's eye of visionary promoters can hardly be considered as authoritative facts on which such a committee as that of the American Government with this question on hand, could base fair decisions. The American manufacturers do not need to descend to such questionable methods of influencing a committee which is attempting to give a fair decision to all.

There is no doubt that they have some grievances which the committee will do well to consider, but in the employment of such tactics and prevarication of facts the Canadian position is jeopardized.

Canada and Canadian manufacturers have been the subject of the grossest misrepresentations, and have been credited with some of the vilest of business methods. We cannot be surprised that a Government, once aware of such policies, appear extremely severe on an industry which resorts to these methods. We must regret that the Canadian industry suffers at the hands of such methods and finds it so difficult to do business on any equitable basis under such a regime.

PULP WOOD FREIGHT RATE

As noted in our issue of March 1st., the Railway Commissioners of Canada, approved the application of railways to increase the pulp wood rates from Canada to the United States. The effect of these rates will be to increase the cost of paper at the American mills, who use Canadian wood, by 50 cents a ton. The protest entered against this by the American manufacturers was of course, considered by the commission before giving their decision.

There is no doubt as the report states that the rates on pulp wood were low, and the decision of the commission seems justified. The contention of some on the American side that this really is a subterfuge to impose additional indirect duties on Canadian pulp wood is of course, unjustified. The commission distinctly states that no such purpose entered into their decision, although they also mention that the ruling will operate to that effect. In as far as it does this, Canada has obtained an additional advantage for we cannot but feel that this

squandering of our raw material, to the aggrandizement of our southern competitors is most detrimental to this country.

The American manufacturers, custom officers and indeed all except those who profit by buying our paper, seem united in insisting that Canada shall be handicapped in the American market. Under these conditions it is gross folly for us to see our wood building up a thriving industry for others.

In as far as this ruling operates, as it does to make our wood more expensive to the American consumer, it must be commended. Naturally we already hear strenuous objections from those who are hit, but neither the railway commission nor Canadians in general, should allow these considerations to influence them, in the conservation of our natural resources.

The recent decisions of the Treasury Department, of the United States Government, in connection with Spanish River, and all the various companies in Quebec, as well as the promised consideration of rescinding the concessions already granted to Powell River, shows us that the Americans expect nothing but a one-sided bar gain.

FOR MAKING TOUGH PAPER.

A French patent has been issued on a process for preparing an extremely resistant and practically impermeable paper by treating paper made in the ordinary way from extremely long and strong fibres with a vegetable gum which forms a solution or emulsion with water, without the assistance of chemicals. Suitable gum is obtained from plants of the family of Colocasia and is a commercial article, particularly in Japan. The gum may be incorporated with the pulp during manufacture or may be applied to the surface of the finished paper, or both methods may be used. A hygroscopic substance is also used. For instance, a paper of substance of 50 grams, per square metre may be heated with 30 grams. of the gum and 0.5 gram. of glycerine per square metre. The fixation of the gum may be improved by treating the impregnated paper with a dilute solution of an alkali at a high temperature. An example of the process for treating paper so as to produce the result specified in foregoing patent consists, according to an abstract published in the Journal of the Society of Chemical Industry, in preparing a mixture by adding a solution of 10 grams. of gum arabic in 100 cubic centimetres of water to a solution of 200 grams. of colocasia gum in 4 litres of water, containing 10 grams. of glycerine and a a few grams. of a hygroscopic salt, e. g., 2 grams. of calcium chloride. A sheet of extremely strong paper is steeped in this mixture, dried at the ordinary temperature, again steeped and dried at 40 degrees to 50 degrees C. The prepared paper is placed in a 3 per cent. solution of "soda" at 10 degrees C., then dried at the same temperature as before and moistened with a solution of equal weights of water and glycerine, so that its weight is increased by about 25 per cent.—Paper Makers Monthly Journal.

SAND BLAST AS BARKER.

A Swedish patent has been issued to L. Yugstrom of Falem on a process of removing the bark from wood. The method consists in directing against the wood, a pressure medium (sand blast), air or water for instance, that carries with it solid particles, which, when they come in contact with the wood, in combination with the pressure medium, effect the removal of the bark on the principal of the sand blast. Round logs can be barked for their entire length, by moving the point, subject to the effect of the pressure medium, forward in a spiral direction.

* * * *

Artificial sponges, according to the Scientific American, are made of paper after the following formula: When paper pulp is treated with zinc choride there results a viscous mass. Sodium chloride is added to this; the mass is then thoroughly rinsed with alcohol, and is finally submitted to the action of a press, the platform of which bristles with a number of fine metallic points or projections. These penetrate the mass, forming tubes like those in an ordinary marine sponge known as "Canalicules." The block thus obtained is of a spongy consistency and is both insoluble and unalterable in water. It is smooth anl pleasant to the touch and is not susceptible of putrefaction. It is a very ingenious employment of the cellulose which transforms papers into artificial sponges.

* * * *

Next to cotton spinning, the production of paper is Japan's greatest industry. Centuries before Occidental people learned to manufacture paper rags it was being made in China from actual fibres. From China this art was carried to Europe through Central Asia by the Arabs. The value of the annual production of paper in Japan is about $16,500,000. Printing paper is the most important kind manufactured, and its total annual value exceeds $3,200,00, while card board is next in importance with a total value of about $605,000.

SWANSON BAY FORESTS WOOD AND LUMBER MILLS, LIMITED.

The mills of the Swanson Bay Forests Wood, Pulp and Lumber Mills are located about 350 miles northwest of Vancouver on tide water on the mainland of British Columbia, and opposite Princess Royal Island. The plant is situated on a small bay adjoining the main navigation channel, between Prince Rupert and the cities farther south.

The sulphite mill has a capacity of twenty-five tons dry sulphite per twenty-four hours and is driven by water power supplied by a chain of large lakes at an elevation of about 350 feet above tide water and about 2,500 feet from the bay. The mill also has a large sawmill in connection with the same, and the pulp wood and saw logs are cut and boomed at any convenient place along the coast tributary to the plant and towed to the plant by the company's tug. Owing to the mild climate on the western coast, it is not necessary to lay in a winter's supply, as the cutting and towing can be operated the year round. A considerable quantity of the wood used for the sulphite fibre comes from the sawmill in the form of thick slabs and other cuttings suitable for the purpose.

The boiler house and digester buildings are of solid concrete, while the machine room has concrete walls up to the windows and other buildings have concrete foundations, the balance being of the customary slow burning construction. Its adjoining water power is sufficient, if properly improved, to drive a pulp and paper plant of very large capacity, and its harbor and shipping facilities are excellent.

THE MANUFACTURE OF SULPHITE PULP IN SCANDANAVIA

By G. B. Steffanson.

Special to Pulp and Paper Magazine.

As early as 1870 three sulphite mills were built in Sweden, of which, however, none are in existence at present. Already from the start Sweden was the leading country in Scandanavia and this position has been maintained ever since.

There were no important developments of the industry until the late eighties when a number of the present mills were built. Since then new mills were built rapidly, particularly during the year 1902-1907. The latter year was a critical one for the industry, partly through the scarcity of wood, followed by a great increase of price of this material. The country could supply the necessary only with great difficulty. Since then no mills have been built and no extensive enlargements of existing plants has taken place.

The majority of the sulphite mills manufacture for export, which was originally confined to the English market, but the rapid development of the industry necessitated the finding of new markets about fifteen years ago and then the Scandanavian product found a ready sale in the United States, and in Eastern Asia. As the price of wood and other raw materials, as well as wages, were rising rapidly, the sulphite manufacturers were forced to study economy very closely and employ as managers highly skilled engineers, who, on account of their training demanded a high renumeration at the outset, but this expenditure was found fully justified later by the results these engineers were able to achieve. Another result of the keen competition on the market was that the mills specialized early on pulp for special papers, with the result that to-day bleachable or bleached and "strong" pulp is manufactured almost exclusively, instead of the so-called "news pulp" which was the main product some ten years ago.

In Scandanavia the Scandanavian white spruce (Pinus Silvertris) is used nearly exclusively in the manufacture of sulphite pulp as other kinds of suitable coiferæ are very scarce. Poplar (Populus Tremula) is found in small quantities only and is sold with a greater profit to the match manufacturers. The increase in value of timber lands has lead many mill owners to adopt a method of slipping the bark in the forests, particularly since means were found to prevent the wood from cracking on seasoning and becoming dirtied, whilst being driven in the rivers or in transit by rail. This wood is taken straight to the chippers without being previously rossed. The bark is collected and dried in the woods and sold to the tanneries and tannin extract works unless the cost of transport is altogether prohibitive. The price obtained for the bark usually pays the cost of cutting the timber. This method of barking has also made it easy to obtain the necessary wood cutters as the sap runs after the cutting of lumber is completed and before the commencement of the driving season and the begining of agricultural operations.

Mills which do not own timber limits are in most cases forced to use wood which has been partly peeled in order to prevent the wood from rotting and have, therefore, been obliged to find a method of rossing the wood which entails the minimum loss of wood. The best method of barking has proved to be by means of barkers on which the log rotates without the use of a so-called barking attachment. In a few instances these mills have been able to interest capital for tanning extract works in order to encourage the slipping of the bark from the wood in the forest. The loss in the rossing of good wood usually amounts to about 15 per cent., of which about 9 per cent. is accounted for by the bark, and the loss in the rossing of thin logs should not exceed 18 per cent. if the operation is well conducted. Driven logs which have lost the greater part of the bark in the water loose from 9 per cent. to 12 per cent. in the rossing according to their dimensions. By careful adjustment of the position of the knives, the velocity, etc., of the chippers and by passing the chips through suitable screens, crushers and knot chippers the quantities of saw dust, sticks and other refuse produced in this operation can be kept within about 3 per cent. on the weight of wood, particularly if the wood is taken to the chippers in such a manner as to permit the man in charge of the machine to give his full attention to the machine. The old method of blowing the chips to the bins has been very largely abandoned in favor of belt conveyors on account of the large quantities of dust produced by blowing which has a very detrimental influence on the quality of the pulp.

Very great attention is paid to the uniformity of the chips, this being the most important factor in the production of a uniform pulp. Slivers are extremely difficult to elminate from the pulp even by means of the best of screens, besides which uniform chips give the best yield quantitatively. Usually about 1.75 to 1.90 cords of wood are required per short ton of pulp produced, the quantity varying with the quality of pulp and wood.

Two systems of acid making are in general use, the chamber system and the tower system in both of which limestone is used. Those few mills which originally installed, chiefly on account of its low first cost, the milk of lime system have without exception gone over to systems using limestone, as soon as it was proved that the same quality of pulp could be produced with limestone and it became apparent that the price of dolomite, which is scarce in Scandanavia, as well as the price of the fuel required to burn the stone were seriously affecting the cost of production, whilst ordinary limestone occurs abundantly on the Scandanavian peninsula.

More than one-half of the Scandanavian mills use pyrites for the production of SO_2. The Herreshoff burner is usually employed for burning pyrites, while the sulphur is burnt in rotary sulphur burners. The pyrites are usually Norwegian pyrites which contain from 44 per cent. to 49 per cent. of sulphur. The price is about $12 per ton of sulphur in the ore. The sulphur used is in most cases Sicilian best second unmixed, guaranteed 99 per cent. pure and costs from $23 to $25 per ton.

By means of a systematic check on the acid making, the elmination of all leaks in the acid system, the proper utilization of all gases and the recovery of all available SO_2 from the digesters it has been made possible to produce pulp with a consumption of sulphur in some cases amounting to only 190 lbs., per short ton; 200 to 210 lbs. is considered normal consumption. The

wood is usually cooked with an acid containing less than 4 per cent. of SO_2, of which about 25 per cent. is combined. The consumption of limestone is 300 to 350 lbs. per short ton of pulp. The digesters are with very few exceptions stationary. Bleachable pulp is always cooked with live steam whilst indirect heating is applied to digesters producing "strong" pulp. The steam pressure is about 80 lbs. sq. in. and the time of cooking varies from nine to twelve hours.

The gas, which is let off from the digesters already while the cook is proceeding in the case of live steam heating, and in any case when the cook is completed, but before the pulp is blown, is partly cooled and forced into the acid tanks in order to heat and strengthen the acid. The acid tanks are always closed and any gas escaping during the heating is conducted back to the acid system.

When practically all the SO_2 has been let off from the digesters, which is usually the case when the pressure has dropped to about 30 lbs. sq. in., the pulp is blown into the pits. Bleachable pulp is usually passed through coarse screens and diaphragm screens; "strong" pulp is passed through centrifugal screens. It has been found that the slivers in bleachable pulp are soft enough to bend and pass through the comparatively large holes of a centrifugal screen while slivers in "strong" pulp are too stiff to pass through.

The slits in diaphragm screen plates are usually 0.014 to .020 in. wide and in centrifugal screens .060 to .072 in. diam. The good quality of pulp obtainable by such coarse screening is explained by the fact that uniform chips yield a uniformly cooked pulp in which the proportion of uncooked wood is negligible. In a few mills where extra fine pulp is made the older types of screens are again in use in spite of their small output and their expensive upkeep. All the screenings are collected and ground in kollergangs, Wahlstrom refiners or in exceptional cases in beaters. The resulting pulp is screened through diaphragm screens with about .012 in. slits and finds a ready sale in England.

Very few mills export wet pulp. It is usually shipped baled in dry sheets. By means of suitable wet presses the pulp is made 42 per cent. to 45 per cent. dry before before coming on the drying cylinders.

The majority of mills derive their motive power from hydro-electric installations or from water turbines direct. A few mills are obliged to use steam power which is usually distributed in the form of electricity. The fuel is in most cases English coals. Many mills, however, use sawmill refuse for steam raising. The price of coal is high, $5 to $5.50 per English ton, on account of the sea freight; the sawmill refuse is somewhat cheaper to use. The steam raising plants are usually of the most modern type, including mechanical stokers, superheaters, counter current economizers, feed heaters and the necessary equipment for controlling the running of the plant. The sawmill refuse is usually burnt in half gas furnaces. The coal consumption varies from 540 to 580 lbs. per short ton in case of indirect heating of the digesters and for live steam cooking from 650 to 700 lbs. The drying requires 650 to 700 lbs. per short ton. In steam driven mills the total coal consumption amounts to 1,700 to 2,000 lbs. per short ton of dry pulp.

The Scandanavian mills are, as a rule, very substantially built, both as regards buildings and machinery, but it must also be admitted that the transportation arrangements inside the mill are not always the best and most modern. The average mill in Scandanavia is more expensive to build than a similar mill, for example, in America, because the Scandanavian mill owners have found that they must have the very best of plant, regardless of cost, if they mean to keep up the quality of their product and meet the increasing competition on the world's markets and still give a fair return on the capital.

In Scandanavia research work was started early in order to find a way of utilizing the sulphite waste liquors and this work has lately been successful in Sweden where considerable quantities of alcohol are obtained from the waste lye. This industry promises to be a source of considerable revenue to the sulphite mills in the future.

With the present state of the markets every sulphite mill should make good profits, but at some future date more than one manufacturer in different parts of the world will regret that he did not in good time provide for keeping his mill up-to-date as regards quality of pulp and cost of manufacture.

PULP FOR PAPER BEER-MUG MATS.

In reply to an inquiry as to how a suitably absorptive wood fibre board for beer-mug mats could be made, a correspondent of the Papier Zeitung advises the use of a light, spongy pulp, as free as possible from rosin. To ensure attractive appearance, it should be very fine and free from splinters. It is difficult to produce a coarse stuff from newly felled wood and a seasoned timber should be employed. To ensure the coarseness of the stuff it should be worked with stones that are not too free grained, because the latter tear the fibres off rather than cutting them. Nor should the grinders run too fast, and they should be sprayed with plenty of water.

In the production of the board, the pulp should be taken up by the rotary screen layers as thick as possible, so that the mats may have the smallest possible number of thicknesses. The woollen couch roll must not be too heavy loaded and must be well covered with new, thick-wooled felt. It is even better if it is covered with an unwoven, very thick, felt hose.

The couch roll should not be placed too far back (toward the knot catcher) so that the felt does not take out too much water at first, the coarse stuff parts readily enough with the water. The wet felt should be freely premeable and soft; the stuff must reach the forming roll quite wet, so that the layers may be closely pressed together. The forming roll should not be too large, and should be only moderately loaded.

If the drying facilities are good, the pressing in the hydraulic or screw-press can be dispensed with, other wise very high felt posts should be formed, so that the pressure may be yielding and the pressing should be gradual. It is a good plan to interpose frequently pieces of old felt hose and pressing felts in the posts, so that the pressure will be more yielding and the pressed roll will remain thicker and more absorptive. After pressing, dry in the drying rooms or air chambers If the mats are dried in channels, the pressing may be dispensed with. Unpressed goods are more porous than those that are pressed, and, by leaving out the pressing, much waste is avoided as the mats are only handled twice, or, perhaps, but once, in a wet condition. The drying can also be effected by the employment of exhaust steam with air-heating without expense.

NEW SOURCE OF SUPPLY FOR THE MANUFACTURE OF PAPER

By Clayton Beadle and Henry P. Stevens.

Those whose business it is to provide material for the manufacture of paper have exercised all their ingenuities in the direction of increasing the output of wood pulp by putting down fresh mills in different parts of the world where pulp wood can be rendered available. This work has for a time overshadowed and stifled all attempts to introduce other paper-making materials.

For many years, and as long as wood pulp appeared to be sufficient to meet the demands put upon it, little or no attempt was made in other directions in the way of investigating further raw materials. This was, in our opinion, due to the fact that paper-makers had, up till recently, taken it for granted that the supplies of pulp wood are inexhaustible. Now the paper trade is waking up to the fact that pulp wood is getting scarce, and prices are rising in consequence. In our opinion, the ultimate salvation to the paper trade in years to come against undue inflation of prices will be in the direction of adopting other materials to supplement wood pulp.

It will be seen that history repeats itself. About half a century ago the supply of rags became so low, and the price, as a consequence, so high, that paper manufacturers were forced to find new materials as a basis of the further development of their industry. In this extremity esparto grass and certain woods—notably, spruce and poplar—were found to produce excellent paper fibre. The enormous expansion in the use of paper since that time has now brought us face to face with a dearth of suitable wood. The price of spruce at the mill has risen from a few dollars a cord to $6 and $11, and in some cases even to $12 a cord, according to location and cost of delivery. Poplar, likewise, has risen from a comparatively low price until now it is, perhaps, worth on an average $7.50 per cord, delivered. United States official reports go so far as to declare that, practically, all the trees producing the highest class of materials on many pulp-yielding areas have been cut, so that the present harvest is from less desirable and more scattered stands, which means reduced yields of fibre in raw material and an increased cost in securing the wood. While the price of wood in the States has continually advanced as the supplies grew smaller, the supply of crop by-products, which we shall have occasion to refer to later, has gone on increasing with practically no increase in price, but with little likelihood of any considerable increase in the future.

Utilization of Waste Wood.

Attempts are now being made in the pulp trade to utilize the waste wood. The Wausau report states that during 1910 in the United States 6½ per cent. of the total consumption of pulp wood was derived from "slabs" and mill waste. It furthermore states that if economy had been practised to the same extent in Canada during the year 1911, as much pulp might have been produced, without cutting one additional pulp log, as is producible from over 43,000 cords of wood. This report charges Canada with prodigious waste, and states that if all useful logs left in the bush by lumbermen, large-sized branches, slabs and other mill waste from the lumber industry in Canada had been converted into wood pulp in 1911, the annual output of pulp wood would have been increased and not a single acre need have been cut over for logs to make pulp wood only.

Utilization of New Kinds of Wood.

Having regard to the rapidly increased cost of pulp wood, the Forest Service of the United States Department of Agriculture have turned their attention to the possibility of the utilization of other kinds of wood. A book issued by this Department gives particulars and furnishes specimens of paper produced from the following woods:—Aspen, bald cypress, beech, cotton gum, Douglas fir, Engelmann spruce, grand fir, hemlock, incense cedar, jack pine, lob-lolly pine, lodgepole pine, longleaf pine, red alder, red maple, red spruce,



Plant Cultivated at Kew.

scrub pine, sycamore, tamarack, tulip tree, western hemlock, and white fir. Each wood was converted into pulp and made into paper on a paper machine on a commercial scale.

These experiments were conducted at Wausau, Wis., under the general supervision of the director and assistant director of the Forest Products Laboratory, and an advisory committee of the American Pulp and Paper Association.

Not only have very promising sheets of pulp been obtained from both the hemlock and jack pine, but paper has been made from them on commercial machines, operating at high speed, and under all other conditions of actual commercial practice. The paper produced is said to possess the strength, finish, and appearance of standard news paper. The production per grinder, the horse-power consumption per ton, and the yield per cord approximate to the averages which obtain in the grinding of spruce. Again, pulps composed of mixtures of hemlock, spruce, and jack pine in different proportions, have been obtained, which are said to compare very favorably with the ordinary spruce ground wood. There appears, however, still to be some difficulty about color, to which reference is made in the reports. On the basis of weight there appears to be relatively little more loss in converting hemlock or jack pine into pulp than in converting spruce.

Since the experiments on hemlock brought out a number of points in favor of the grinding of that wood, two paper mill companies have signied their intention of using it in their cheaper grades of paper. One of these mills has already begun to do so, and is said to be well satisfied with the pulp obtained.

Hedychium coronarium.—To bring to the notice of those interested in the trade the possibility of actually cultivating crop-plants for the manufacture of paper is indeed the chief object of this communication, and with a view to showing what might be done in this direction we wish to describe in considerable detail the work which we have recently done in connection with Hedychium coronarium. This plant is a member of the natural order Zingiberaceae, is a native of India, being distributed from the Himalayas to Ceylon and Malacca, ascending to 4,000 ft. in the Khasia Hills and 6,000 ft. in Ceylon. It is also recorded from Central America, the West Indies, New Zealand, Mauritius and West Africa (Corisco Bay). Many years ago it appears to have been introduced into Brazil, and it has run wild in many of the States, being especially abundant at Morretes in the State of Parana, where it has covered a large tract of the swampy country.

Some peculiar paper-making qualities of this fibre were first described in a recent paper before the International Congress of Applied Chemistry, and the plant was more particularly described in a recent issue of the Kew Bulletin.

We have pursued the inquiry further, with the view of finding out the climatic and other conditions which particularly favor its rapid growth.

Rough paper was first produced from Hedychium in a small experimental paper in Morrrtes Parana. In this case, the paper was produced direct from the green stem after crushing on the field. That which has been produced in different paper mills in this country, was from the dried down crushed material, it being impossible to get the green material over here without fermentation. In order to prove the paper-making qualities of the green stems, we tried green stems supplied through Kew, and found that papers of the remarkable qualities referred to later were producible either from dried-down or green stems. Although 5 per cent. of soda on dry raw material gives, in our opinion, the strongest paper when treating the dried material, we have succeeded with 2½ per cent. to 3 per cent. when treating the green.

The plant after harvesting and crushing between rollers to remove juices, can be immediately beaten in Hollanders and made into paper. With a mill conveniently situated to the sources of supply, so that the operations could be carried on without loss of time, the whole treatment, from harvesting to the manufacture of paper, need not occupy more than a space of twenty four hours.

The ease with which the stuff is beaten surprises us. For the production of strong papers from most paper-making materials, a great deal of beating is necessary,



Plant in Brazil.

but as Hedychium is easily reduced to a pulp with gentle "brushing," this is certainly a feature in its favor. The strongest papers are produced from material just brushed out.

The yield on the dry weight stem is dependent upon the extent to which the material is chemically treated. We have found the yields to be as follows:

Soda Used, per cent.	Yield, per cent.
2½	72
5	60
10	50
15	43

Papers, comprising those described later, have been produced with a soda consumption of 5 per cent. and a yield of 60 per cent.

Hedychium can be created by macerating with lime in pits in the manner employed for treatment of straw.

TABLE I.

Table Shownig the Papers Made from Hedychium on Paper Machine.

	B	C	D	F	G
Thickness in mm.	·088	·064	·070	·080	·10
Substance in lbs. demy ..	41·1	9·2	10·0	13·3	20·2
Breaking length in metres..	8,018	8,303	10,083	9,381	9,039
Total elongation at break ..	7·0%	6·5%	6·0%	7·1%	7·9%
Permanent elongation at break	5·1%	5·1%	4·6%	4·5%	5·1%
Bursting strain	20·7	14·8	17·8	45·0	55·0

Hedychium paper has been made on a commercial scale at different paper mills in this country. Table 1 contains the results of tests made with papers produced on different paper machines. In the case of B, C, D, the parenchyma cells were partly removed in the course of manufacture, in F and G they were retained. B, on account of its being unsized, is more like normal water leaf. C is rosin-sized, and D "tub"-sized with gelatine. The unsized paper B was not inkproof, whereas in the case of F and G, although nothing had been added to size these sheets, in consequence of the presence of the parenchyma cells, the paper is not only inkproof but greaseproof, and of a parchmenty feel. The breaking length in all cases is high, as high as that of the strongest Manilas, and, as will be seen by reference to the table, what appears to distinguish the self-sized paper from the normal is the higher bursting strain in the caes of the former.

TABLE II.

Table Showing the Bursting Strain and Elasticity of Hedychium Papers of Different Thickness and Substance.

Thickness.	Substance in grams per sq. metre.	Substance in lbs. demy		Bursting Strain in lbs. per sq. inch	Elongation at break
		lbs.	ozs.		per cent
·040	29·3	8	12	19·5	14·2
·065	52·0	14	6	46·2	15·1
·100	83·2	21	14	74·7	16·7
·146	118·2	31	14	102·3	18·4
·176	136·4	36	4	118.6	14.5

Papers from fine, flimsy tissues to thick substances have been produced with no added material, and, as will be seen by reference to Table 2, the bursting strain is high comparatively, even for very thin paper tissues. This table also shows that papers can be produced, where required, to thickness or substance may be. Paper produced entirely from this fibre has been submitted to a large firm of cable manufacturers and thoroughly tested, both physically and electrically, and declared to be suitable for cable insulation. Hedychium paper, therefore, appears to rival the best Manila papers in the possibility of its application for the special purposes to which Manila is put, as well as being applicable for all ordinary purposes, and can be used either alone or in conjunction with other materials, either bleached, unbleached, or partly bleached.

We should like to point out one possible application of a material of this description which is likely to be extended in the near future. We refer to the manufacture of so-called pulp yarn produced by converting endless narrow thin ribbons of paper into cylindrical form, and then spining into yarn. We exhibit a number of specimens of this yarn produced by the Textile and General Spinning Co., Ltd., which are made into the form of ropes, twines, cords, matting, carpet bagging, and also into fancy goods, such as dress trimmings, etc., sometimes in conjunction with cotton, flax, jute, hemp, etc. This industry is likely to become a large one. The early attempts have suffered very much in consequence of the utilization of inferior qualities of paper. In order to compete with jute yarns, it is self-evident that the very strongest and most elastic paper will have to be utilized. Jute yarns have a breaking length of 10,000 metres, and, now that paper is producible with fibres possessing special qualities of equal breaking length and high elasticity, this industry is much more likely to be developed on sound lines.

TABLE III.

Table Showing Materials that Might Become Available for the Manufacture of Paper.

	Acres und'r cultivation	Tons per acre per annum of dry raw mater'l	Tons of raw fibre per annum on total area	Percentage yield of pulp on dry raw mater'l	Tons of pulp per acre per annum	Tons of pulp per annum on total area
Cropped once a year.						
1. Corn Stalks	30,000,000	1.0	30,000,000	12-18	0.12	3,600,000
2. Broom corn ..	178,584	3.0	450,000	32.40	1.00	150,000
3. Rice-straw ..	7201000	2.0	1,500,000	35	0.70	500,000
4. Flax-Straw ..	2,000,000	1.0	2,000,000	30	0.30	600,000
5. Cotton-hull fibres.. ..	—	—	150,000	75	—	112,000
6. Cotton Stalks..	10,000,000	0.45	4,500,000	35-40	0.15	1,500,000
7. Hemp-straw ..	—	5.0	—	20	1.00	—
8. Hedychium ..	—	6-10	—	60	4.00	—
Cropped every 5 yrs.						
9. Bamboo (Pearson, Sindall)	—	$1\frac{5}{5}$	—	45	1.35 to 1.57	—
10. Bamboo (Pearson, Raitt)..	—	$\frac{8}{5}$ to $1\frac{8}{5}$	—	45		—
Cropped every 40 yrs.						
11. Pulp wood ..	—	$\frac{16 \text{ cords}}{40}$	—	45	0.20	—

Table 3 is intended to give details of certain materials which show possibilities of coming into use in the future. There are other materials, such as "sudd," which have not been included. They have all been tried commercially, some of them are already extensively and regularly used. These particulars comprise acreage, yield per acre, the possible aggregate amount available in the form of raw fibre, and certain other particulars, with a final column intended to give some idea of the aggregate amount of bleached pulp producible. The materials Nos. 1-8 are capable of cropping once a year, 9 and 10 every five years, and 11 about every forty years.

*—Paper read before the Royal Society of Arts on February, 1913.

ST. LAWRENCE PAPER MILLS COMPANY, LTD.

By M. C. J. BILLINGHAM.

The new addition which the St. Lawrence Paper Company has been building during the past season in connection with their present plant at Thorold, Ont., is now nearing completion and the owners hope to see the first sheet pass over the rolls not later than April 15th.

The new plant is built directly adjoining the present one, but is in a sense an entirely separate unit as far as the manufacture of paper is concerned, since it is equipped with all the machiery necessary to independent operation. It is situated on the banks of the old Welland Canal which during recent years has been used for manufacturing purposes almost exclusively, all active navigation taking place on the new canal. One decided advantage which the mill has is the fact that it is located on lock twenty-three which is comparatively close to the intake end of the canal and consequently they receive their supply of water before it has been contaminated by the refuse discharged by other manufacturing plants located farther down. As an extra precaution, however, the company has installed Gravity Sand Filters of a size sufficiently large to purify all water used and thereby insure an exceptionally clean sheet in the finished product.



St. Lawrence Paper Mills.

The mill consists of a stock house 168 feet by 60 feet, three storeys; a bleach and rotary room 64 feet by 60 feet, two storeys and basement; beater room 72 feet by 96 feet, two storeys and basement; machine room 230 feet by 51 feet, one storey with basement under wet end of machine; supercalender and cutting room 60 feet by 72 feet, one storey. The entire building is constructed of brick and reinforced concrete with the exception of the floors in the stock house which are of mill construction.

The machinery is conveniently arranged in the following manner so as to give a continuous forward travel to the stock throughout the entire process of manufacture. Leaving the sorting room the stock passes through a King Shredder, a Norwood Railroad and Fan Duster located on the upper flor of the Rotary room and discharged direct into the three 8 by 24 rotary bleach boilers on the floor below. From the rotary bleach boilers the cooked stock is discharged into receiving vats located directly underneath. These receiving vats are equipped with a specially designed Agitator for pulverizing, thinning and softening the stock so that it may be easily handled by the pumps which force it from here to the washing engines in the adjoining room. In this room is to be found the three, 2,000 h.p., 4 cylinder, wood tub washers and two 2,000 h.p. iron tub bleachers, and three 1,200 h.p. wood tub beaters, conveniently arranged so that the stock can be discharged directly into the drainers and stock chests located in the basement. The sulphite, Jordan, and old paper stock chests are also located in this basement and the stock pumped from these to its respective points of distribution There is located in the machine room a 140 h.p. Foundrinier paper machine equipped with Waterous plate screens, three presses, twenty-three 48 h.p. diameter dryers, one 7 roll stack and one 9 roll stack of calenders. Still maintaining its continuous forward travel the paper passes through three stacks of supercalenders and directly into the cutting room where are located six 8 reel cutters. All machines with exception of the variable speed line shaft on the paper machine are driven with motors, receiving their power from the Paper Company's new power house located at Lock 21 on the same canal. This power house has just been completed and is without a doubt the finest on the canal. It is equipped with eight 33 h.p. horizontal turbines direct connected to two 475 K. V. A. Generators, capable of generating approximately 1,000 h.p., under a 14-ft. head. Power will also be furnished from this point to the Interlake Tissue Mills, which are located in the immediate vicinity.

The average daily output of the new mill will be approximately 15 tons, which will increase the total output of the plant to about 25 tons.

D. J. Albertson the Paper Mill Engineer of Kalamazoo, Mich., and Toronto, Ont., had charge of the work on both the new mill and the Water Power Development. M. C. J. Billingham acted in the capacity of

Resident Engineer for Mr. Albertson. W. J. Trimble of Niagara Falls, N. Y., was the General Contractor.

Actual building operations were begun about the middle of June in 1912 and considering the enormous amount of difficult excavating which was encountered, the time consumed in building has been exceptionally short.

I. H. Weldon is President; S. F. Duncan, Secretary-Treasurer and General Manager; T. A. Weldon, Manager; and C. F. Redmond, Superintendent. These men obtained and on the courage displayed in erecting such are to be highly commended on the results they have a large mill in view of the somewhat limited market for book and writing papers in Canada at the present time, but they have great faith in Canada's future and are placing themselves in a position of meeting these demands well in advance.



Montrose Tissue Mills.

MONTREAL ANXIOUS FOR NEW ASSOCIATION.

(Special to the Pulp and Paper Magazine.)

Montreal, March, 13, 1913.

Pulp and paper men throughout the Province of Quebec have taken up with a good deal of enthusiasm the proposition that a Canadian Pulp and Paper's Men's Association be formed. A number from this Province attended the first meeting in Toronto, while practically the whole body will be represented at the Windsor Hotel on the 19th. inst., when a luncheon takes place, and the completion of the organization will be brought about.

The industry is such an important one and so many questions are continually cropping up for settlement that every man in the business realizes that some organization necessary. In conversation with one of the leading manufacturers, many of the advantages resulting from such an organization were commented upon. "If there was nothing else than our relationship with the railways, it would pay the pulp and paper men throughout the country to organize. We find that there are continually such questions as freight rates, demurrage charges, and many other questions which have to do with the railways, coming up for settlement. A single company is powerless to fight the railways, but as a united body we could do a great deal more. There are also such questions as interprovincial regulations, which could be handled by such an organization. Questions such as tariffs, and what is probably the most important of all, viz., the matter of gathering statistical information regarding the number of mills, their annual consumption of wood, their output of pulp, paper, etc., as well as the amount of pulp and paper shipped to other countries. In brief, there is an immense field for the gathering and compiling of statistical information relating to the industry. All live pulp and paper men feel that such an organization would justify itself from the outset, and I believe that the meeting to be held on the 19th, inst., at the Windsor Hotel, in Montreal, will result in the organization of such an Association."

BIG SULPHITE MILL FOR GASPE.

(Special to the Pulp and Paper Magazine.)

Montreal, March 13, 1913.

The American invasion of our pulp and lumber areas continues. The latest example is found in connection with the entry of several large Philadelphia pulp and paper men into the Gaspe district. It is stated here that a big lumbering firm in Whitmer who own the Parsons Pulp and Paper Company of West Virginia, are uniting with W. H. Shore of the Jessup and Moore Company of Philadelphia, the large book-makers, and have secured large limits in Gaspe. The company have been given a Canadian charter under the name of the St. Lawrence Pulp and Paper Company, and will buil a hundred ton sulphite mill at Grand Pabos, Gaspe, Their mill is to be located on the water front, in order that they can ship their sulphite pulp by boat to Philadelphia and other centres on the Atlantic coast. It is expected later on that they will manufacture news, but at present their operations will be confined to the production of sulphite. Work on the mills is to commence this spring.—R.

THE MANUFACTURE OF STRAWBOARD AND STRAWPAPER

By Leo Schlick, M.E.

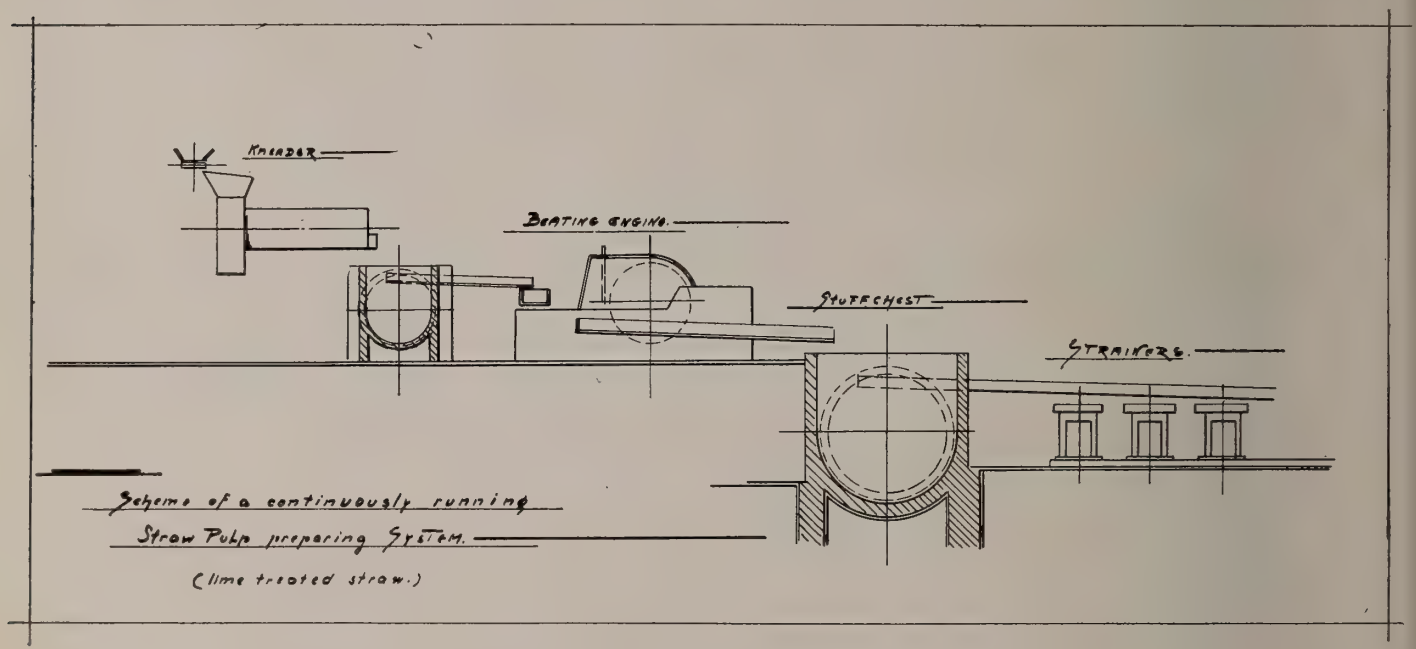
II.

In reference to the article in the issue of February 15th, we will now follow up the continuously running pulp treating system as shown on the enclosed drawing.

The lime treated pulp is here conveyed into a series of kneaders of suitable design. In here the pulp is disintegrated. After having passed the kneading system, the pulp is continuously emptied into a stuff chest, which is provided with agitators and scoop wheels.

Additional water has to be added to the pulp in the chests and the pulp is now pumped to a beating system.

Numerous continuously running beating systems have been invented. For instance, there is a design of an endless tub in which many small rolls are placed. All the rolls have one centre line and are connected by couplings to each other. A main belt drives the whole system and the pressure on the heating surface is regulated by means of lever operated bed plates.



The idea is not so bad if the diameter of the beater roll shafts did not have to be increased.

Either this has to be done and unequal couplings and shafts are to be used or all the shafts of the rolls have to be equal in diameter.

In the latter case a lot of useless material has to be paid for and kept in repair.

The second main fault is that the rolls have to be taken relatively small in order not to add too many horse power to the next shaft. The result is complication and many rolls and wearing parts.

Another disadvantage is that the pulp varies in its hardness, according to the varying quality of the straw and the unequal digesting process.

A beating engineer with mentioned or similar running beating system has, therefore, to watch carefully the pulp flowing out of the system into the chests and has to change the pressure on the beating surfaces if he wants to obtain the longest fibres, which means the strongest pulp.

The price paid for the material is always in accordance with the strength of the material and the writer thinks that it is a somewhat poor thing if the rentability of a mill depends on a human regulator where an automatic regulator—about which we will talk later on—may be used.

The simplest solution of a continuously running beating system for line treated straw pulp and similar pulp is the following:

A high efficiency beater, that means an engine with an efficient beating surface and a tub designed for rapid pulp circulation is provided with a sieving device as shown on sketch.

The latter system forms a kind of centrifugal screen. The pulp is pumped continuously in a tub and sufficiently beaten fibres are screened through the sieving device by means of the centrifugal power produced by the roll. The pulp flows from this to a stuff chest with scoop wheel and then to the board or paper making machine.

I repeat what I partly said in my first article that a most modern beating engine has to be so designed that a very rapid flow of the pulp in the tub is obtained.

I also repeat that this is not done by additional power, but with less power consumption per 10 lbs. of pulp, although some people think that they can't get anything for nothing.

We may, however, obtain a higher efficiency from a transportation organ and herewith an increase of efficiency and that counts something.

Although a beating engine seems to do rough kind of work and very little attention is usually paid to study the beating process in order to improve the pulp

quality and to save besides that power; it must be stated that the mentioned process forms the heart of a paper mill plant.

Where the beater room is dirty and without light, where the beaters are leaking, overflowing and carelessly taken care of, there is hardly a good paper maker employed.

The patents on beating engines are legion, and the most absurd constructions have been created—with worm and wheel propellers of every design, etc. We have to consider that a beater roll has a double work to do—firstly, it has to pump as a transportation wheel; secondly, it has to treat the pulp.

In order to design a correct beating engine co-efficient of frictions of the beating surface has to be calculated accordingly.

Power measurements and kind of fibres employed and the flow of pulp has to be studied in order to get a well shaped tub. If you ask, is this necessary, we have only one answer,—viz., Yes. A saving of 6 horse power per beater means the saving of 60 h.p. each consuming 12 lbs. of steam per h.p. hour. If a high efficiency power plant is in use, you require:

$60 \times 12 = 720$ lbs. of steam per h.p. hour.

The price per ton of coal is say $3.00 f.o.b. mill and the coal has a cipher of evaporation of 8.

$$\frac{720 \times 3 \times 24}{8 \times 2200} = \$2.952 \text{ daily unnecessary expenses.}$$

which amounts to $900 per year.

These are the absolute costs of coal without drawing into consideration the capital invested in the power plant. Consider this sum during a period of 25 years with an interest of only 5 per cent. and the yearly saving of $900 will amount to a capital of

$$K n = k \times p^n + R \times p^n - 1$$

$$= 900 \times 1.05^{25} + 900 \times \frac{1.05^{25} - 1}{1.05 - 1}$$

$$= 900 \times 25 \log 1.05 + \frac{900 \times 25 \log 1.05 - 1}{1.05 - 1}$$

$$= \$46,260$$

The mill manager has in this case saved a couple of hundred dollars in buying cheap machines and wasted $46,000 within 25 years.

Strainers.

Strainers for straw pulp are flat strainers and provided with slotted plates. It has to be seen that these kinds of strainers have an easy cleaning arrangement and a suitable trough system for the entering and outflowing pulp. Modern strainers ought to have a noiseless shaking arrangement, as the ordinary cheap design causes trouble and repairs.

Stuff chests ought to have a sufficient capacity in case something happens on the stuff preparing plant, so that the board or paper machine may run without stop.

Straw Board and Straw Paper Machine.

When the straw paper industry was in its childhood there were small machines in use of astonishing simplicity. It is of historical interest to sketch the scheme fo such a machine. The wire only 32 feet long was provided with only one suction box. Couch press and first press were placed in one unit and the second press was formed through a press roll which was communicating with the only one dryer cylinder. The capacity of these machines was three-quarters to two tons daily of yellow thin straw paper. Hundreds of these have been installed and I believe some of them are still running in Europe. The straw has the quality to let the water flow away very quickly on the wire and therefore very thick boards may be produced on a relatively short wire.

Modern straw paper machines are built with four-driniers and two to three wet presses. The dryer part of board machines is generally composed of large dryers of 7 ft. diameter or so, in one row, and the film is guided in a special way in order to evaporate a part of the water by means of warm air in the machine room, to make the film more elastic to obtain a better price.

These large cylinders are generally used in Holland where the straw pulp industry is quite an important one. The American machines are using mostly small dryer cylinders in the generally employed two row system.

The cylinders are getting covered with fibres and lime and ought to be provided with doctors. Where a smooth surface of the boards is wanted sometimes the last two dryers are placed vertically one above the other and the upper one is provided with a lifting device.

Owing to the impossibility of rolling the boards, a cutting up machine has to be placed on the end of the machine. It is here cut to the size required.

(To be continued.)

THE NORTHERN ISLANDS PULPWOOD CO., LIMITED.

Mr. C. T. Clarkson, assignee, says:

About a month prior to the failure, the Imperial Bank of Canada, which held security over the pulp wood, obtained an estimate on the same from persons believed to be competent and such estimate showed 18,000 cords on hand. Operations continued for a month after the making of the estimate, during which period Mr. Russell stated that at least 4,000 cords more had been cut, making the total amount of pulp wood which should have been on hand at the time of the failure, 22,000 cords. In preparing the statement, I arbitrarily cut the quantity to 16,000 cords to be conservative, but the actual operations have shown that there was less than 12,000 cords on hand. This means that upon the basis of the bank's estimate and Mr. Russell's statements, there was an actual difference in value to the estate of not less than $50,000, and between the quantity shown on the statement of affairs as on hand and the actual quantity a difference of over $20,000. No wood was lost in the operations excepting about 200 cords stolen by shore pirates, and it is therefore apparent that the estimate given to the bank and the statements of Mr. Russell were apart from the facts.

The position of the estate at present is as follows:

Liabilities—		
Trade creditors' claims	$50,000.00	
Detroit Sulphite Pulp & Paper Company	152,000.00	
Imperial Bank claim	30,000.00	
		$232,000.00
against which the following Assets are held—		
Camp supplies	$5,894.00	
Mill and machinery	27,932.00	
Loading equipment and chattels.	45,283.00	
Pulp wood lands	16,250.00	
Port Arthur real estate	10,000.00	
		$105,358.00

in addition to which the estate holds licenses, subject to royalty payments, to cut wood upon about 81,000 acres of land.

THE BRITISH WOOD PULP ASSOCIATION AN IDEAL FACTOR

(Specially Contributed by Our London Representative)

There is an old adage that "Unity is Strength." It is a motto, or maxim, symbolical of German, Scandinavian and American truism; it promotes social and friendly relations in the pulp and paper industries—not to speak of business—and at the same time acts as a powerful influence for good and raises an element of confidence in cases of dispute or unpleasantness, or, in the working of unarbitrary methods. Pulp makers in America and on the Continent having adopted this old and respected adage as their password, it stands to reason that the British importers should throw their lot into the same scales, and, after weighing things up for the past sixteen years, I have come to the conclusion that they are not to be "found wanting"—and that is saying a great deal. To-day the British Wood Pulp Association is in a healthy position. Financially it is a sound body; the membership includes the most highly respected and wealthy men of the trade, and the rules and regulations laid down are acted upon with precision and judgment. Again, those who have attended the dinners or any other social event of the British Wood Pulp Association, must admit that no other body in the pulp and paper trade on the continent, or elsewhere, can excel it as a body, for doing justice to the guests or for enjoyment. The annual dinner of the association is one of the great events of London life, and the last one held in December, 1912, was attended by Canadians, Americans, Swiss, Germans, Norwegians, English, Scotch and Irish men in the trade. Here one meets the cream of the pulp and paper trade, ideas are exchanged, new ones conveyed, business is discussed, and vins and jokes combine in making every year a record for success and social intercourse.

Now, one may ask: "What does the British Wood Pulp Association exist for?" It exists for six principles: (1) to further the interests of the wood pulp trade by friendly intercourse and interchange of information and views; (2) to establish relations with kindred associations at home and abroad; (3) to recommend and adopt a uniform contract note and system of drawing and testing samples; (4) by combined action to bring pressure to bear on railway and dock companies, steamship owners, wharfingers, lightermen, etc., in order to secure advantageous rates and charges; (5) to assist in any litigation by which the general interests of wood pulp importers are, in the opinion of the committee, affected; (6) to compile and issue statistics relating to the trade. These are the six cardinal points which the members of the Association tsrictly adhere to, and of course a good deal of the business is transacted privately—that is subjects of extreme importance and relevant to the interests of the members are talked over within closed doors, so that the outside world is none the wiser. That's business. Now let us see what the association has achieved! Its reputation for social intercourse and social gatherings is well known, a good relationship has been established with Scandinavia, Germany and America and bodies in Canada, etc., a uniform contract note has been drawn up and it brings in a nice little revenue, statistics are prepared on the state of the trade and issued to each member, litigation is assisted. Under the latter category, I must state that the association has what is known as a "Protection Association, Limited,"—in other words a branch which, according to the articles of the association, aids members in the recovery or enforcing, in the United Kingdom or elsewhere, of claims by them or any of them, and whether on their own behalf or on behalf of themselves and others whom they represent; to enforce, resist, and otherwise determine by legal proceedings, arbitration or otherwise, in the United Kingdom or elsewhere, all claims for or questions arising out of or in connection with.....any matter or thing comprised or included in or arising out of or incidental to the objects for which the company is established, or any of them. The liability of the members is limited, and subscriptions are based on import tonnage. The importance of a body of this constitution cannot be overestimated. It is a fighting force ready for any land to protect the British wood pulp men and, consequently, they are not afraid of untoward results in demanding and exercising their rights. This is where confidence in a well managed association is displayed.

Another subject the association is very keen on is the sampling and testing of wood pulp for moisture. In 1912 a case was investigated. The parcel of pulp in dispute was first tested at the quay on arrival and afterwards at the mill by different analysts, the two tests showing a wide difference in results. In the first case, the contract conditions seemed to have been complied with and it was the second which required investigation. There was a strict inquiry into the complaint and the analysts were called upon to give an extended report to the association, and then the members found the test was not very accurately taken and that it was taken entirely at variance with the rules they had laid down. For the testing and sampling of pulp for moisture the Association rigidly enforces the following rules:

(1) Samples to be cut by the "wedge" system. The wedges or triangles to be drawn from the centre to the outside, with base angles of 24 degrees or 12 degrees, according to the size of the parcel; (2) templets stamped by the association, to be used for regulating the size of each wedge; (3) two per cent. of the bales (but not less than six) to be sampled, and the analyst to have the exclusive right to return within three days and take a further 2 per cent. should he deem it advisable; (4) the selection of the bales for testing to be left entirely to the discretion of the analyst; (5) five sheets from each bale to be sampled. The first sheet of No. 1 bale to be drawn at zero (or, say, the outside sheet), the second sheet at 5 inches downward, the third sheet at 10 inches downward, the fourth sheet at 15 inches downward and the fifth sheet at 20 inches downward. Samples of the second bales to be drawn at 1, 6, 11, 16 and 21 inches downward, etc.; different sized bales pro rata. The object of this is to have the outside sheets in fair proportion. The wedge-shaped sample, as described above, to be drawn from each of the five sheets of a bale, and the wedge to be cut right through the sheet or slab of pulp. The sheets are to be considered

as divided into 16 or 32 wedges or triangles, and at each cutting the wedge next in rotation is to be taken. More than half of the parcel must be in existence for testing when the analyst arrives, otherwise no claim is permissible.

To carry out these rules authorized analysts are appointed in different centres, and then, of course, all disputes are dealt with by the association, or, if necessary, submitted to a court of arbitration. To set a decision of the arbitration court aside an application must be made in one of the high courts before His Majesty's judge, and of course if the British Wood Pulp Association are against the application, or, in favor of it, as the case may be, it may be imagined what a strong body one has to contend with.

Like the pulp and paper manufacturers association, which has just won a great victory at Appleton, Wis., the British body is also concerned in charges for cars, freightage, demurrage, etc., and the association is affiliated to the Mansion House Association on railway and canal traffic in England. It is, therefore, in a position to know what moves or ideas the railway companies are about to take up in regard to charges. Action is then taken where a wood pulp man is affected.

Unfortunately it is not in my power to describe in detail the many advantages there is to be derived from the constitution of the British Wood Pulp Association. They are mostly of a private character and, therefore, to publish them would not be fair to the interests of the association. Their strength is in the unity that permeates the members and in Frank Lloyd, head of Edward Lloyd, Ltd., there is a shrewd, level-headed president—the biggest buyer of pulp in the world and one of the best friends to pulp men. He is supported by such men as F. E. R. Becker, L. P. Andrews, J. A. Nordberg, C. T. Craig, C. T. Owen, A. E. Reed, W. G. Taylor and Harry Wood—all men of vast experience who meet the other members of the association, and without divulging any private matters of their own, personal or business, they meet on common ground to further the best interests of the trade and study their own interests. Here are some of their forms in vogue. For a few dollars they supply one hundred contract notes, moisture certificates, arbitration submission forms, and for one guinea a year acounts of the registered qualities and values of wood pulp imported into the Kingdom, which are specially prepared for the association by the Customs each week. Consequently, what the members of the association do not know is not worth knowing.

The whole thing about an association is its constitution. A lot depends on the unanimous feeling of the members—but for success, good organization, and other private methods the British Wood Pulp Association ranks pre-eminently as a model. To the wrongdoer its name is a terror; to the just it is a friend.

F. N. BURT COMPANY.

At the fourth annual meeting of the F. N. Burt Co., Limited, held in Toronto, the report showed profits for the year of $189,430. As the preferred dividend, on the volume of preferred stock extant during all but the last few days of the year, required $100,114, there was a revenue of $89,316 on the common, or at the rate of 11.9 per cent. on the $750,000 outstanding.

During the year $554,000 of new preference stock offered to shareholders was all alloted.

The old officers were re-elected with the addition of F. N. Burt, who becomes vice-president.

TO ELIMINATE VIBRATION

An improvement in the mechanism for driving a paper machine has been perfected by Robert Gibb Hutchison, connected with the Sittingbourne Paper Mills, of Kent, England, who thus describes his invention:

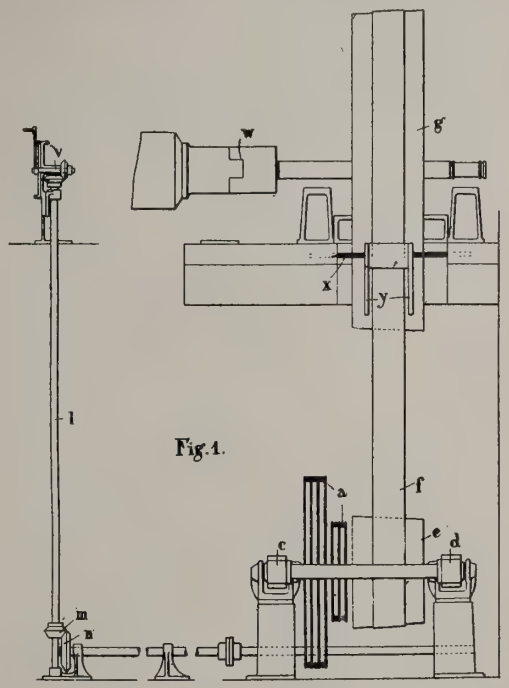


Fig. 1.

"The invention consists in a drive for the parts or sections of paper making machinery in which the desired shaft is directly driven through belts or the like

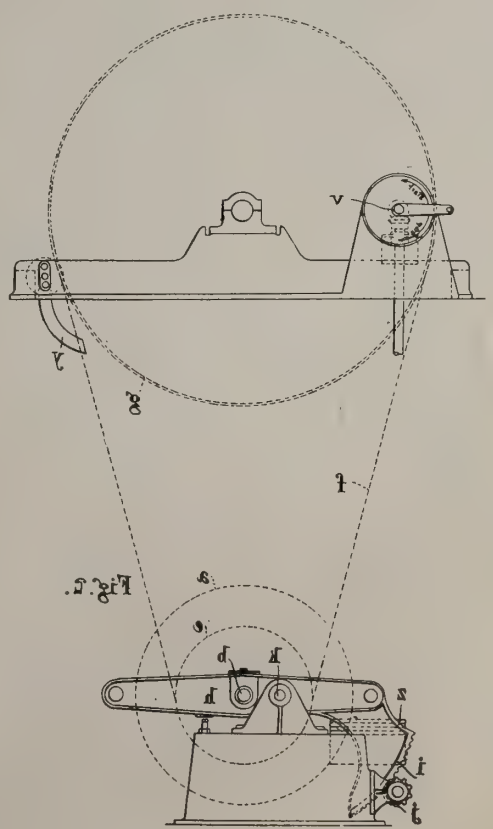


Fig. 2.

which can be suitably adjusted as regards tension for throwing the machine into or out of operation.

"The invention also consists in a high speed drive for paper making machinery in which the individual sections are driven through belts or rope pulleys mounted on suitable short shafts, which can be raised and lowered for the purpose of starting and stopping the machine.

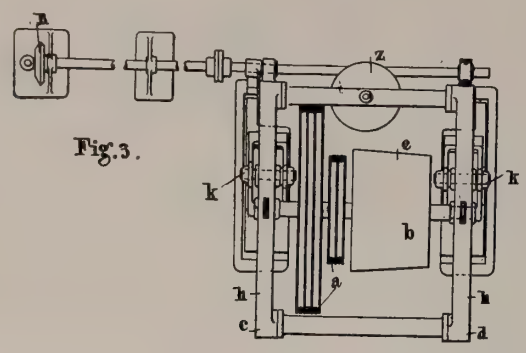


Fig. 3.

"The invention also consists in the improvements in and relating to paper making machinery, and particularly to high speed paper making machinery hereinafter indicated.

"Referring now to the accompanying diagrammatic drawings, which illustrate one manner of carrying this invention into effect, Fig. 1 is a side elevation, Fig. 2 a front elevation looking in the direction of the arrow of Fig. 1 and Fig. 3 a plan of an arrangement particularly suitable for high speed drives. Figs. 4 and 5 show, respectively, a plan of the upper driving pulleys and a plan of the lower drive of part of a machine according to one construction of the present invention. Figs. 4a

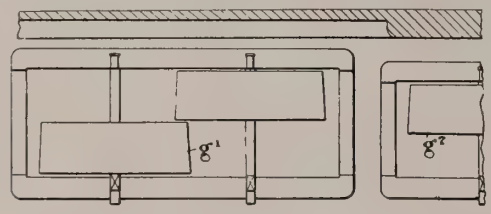


Fig. 4.

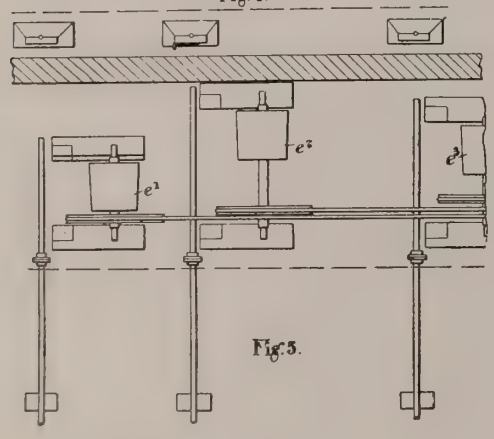


Fig. 5.

and 5a are continuations, respectively, of Figs. 4 and 5.

"In carrying the invention into effect in the form illustrated by way of example, rope pulleys a are mounted on a short shaft b carried in suitable bearings c and d. On the shaft b is also mounted a conical pulley e adapted to receive a belt f which passes over another pulley g in connection through the usual clutch w with the section of machine to be driven. The position of the belt f on the shaft g can readily be adjusted by means of a striker y operated from the screwed rod r. The shaft b carrying the lower pulley e is mounted on a swinging arm h with balance weights z, the arm having a circular rack i connected thereto, a pinion j being placed adjacent for co-operating with the rack to move the arm h about its fulcrum k and thereby to life to some degree the lower belt pulley e for the purpose of relieving the tension on the belt f necessary for driving purposes. The pinion j is operated through a shaft l and bevel wheel or cranks m and n placed in a convenient position with respect to the parts of the machine; in fact the machine and this gear can conveniently be placed on the floor level, and the lower pulley and other parts in a pit.

"In Figs. 4 and 5 there are illustrated certain rolls or sections to which the arrangements of the above kind are applied. The pulleys e^1, e^2 and e^3 represent, respectively, the swinging pulleys represented by e Fig. 1 corresponding to the couch rolls and the first, sec-

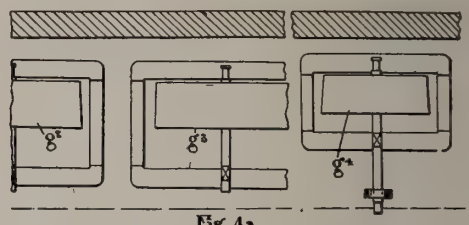


Fig. 4a.

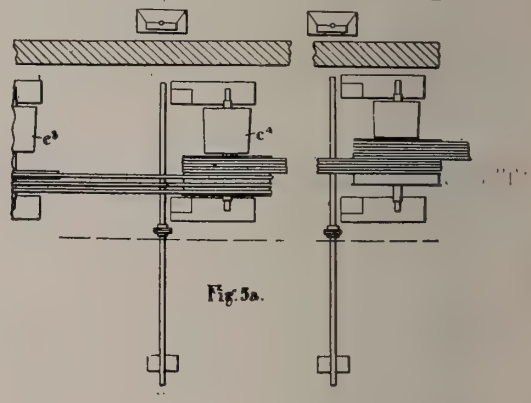


Fig. 5a.

ond and third press rolls respectively. Similarly the pulleys g^1, g^2 correspond to the upper pulleys connected to the sections or rolls to be driven.

"In operation the lower pulley e is continually rotated while the drive is applied to the belt pulleys. To start the machine section the striking gear o connected through the vertical rod l and bevel wheels m and n to the pinion j is operated so to move the lever h carrying the lower belt pulley e that sufficient tension is put on the belt connecting the upper and lower pulley s g and e, respectively, to drive the upper pulley g and thereby drive the section of the machine connected thereto.

"It will be understood that the above example is given as one form only, and modifications may be made as desired; for instance, instead of the gear arrangement represented by v a simple hand wheel may be provided at the top of the shaft b and the necessary reduction be obtained either at the gears m and n or at some other suitable gearing. Also instead of using a jockey pulley e suitable clutches degree of tension on the belt can be adjusted by means of notches marked on the striking gear or in any other convenient manner.

"It will be appreciated that according to the present invention a simple and effective means of starting and stopping the sections of a paper making machine is obtained, enabling high speeds to be utilized without vibration or gearing troubles, and with little lubrication, and also permitting ordinary belts to be employed. Further, no clutches are needed, and because the belt is at rest when the machine is stopped the life of the belt is lengthened. Further, great steadiness in running is insured and little power required to drive the machine." We also understand that Messrs. Charles Walmsley and Co., Ltd., of Bury, England, are the sole manufacturers for this patent drive for all countries.

PULP WOOD FREIGHT INCREASE

Ottawa, March 14.—That an appeal will be taken from the decision of the Railway Commission allowing the proposed increases in pulp wood rates, from points in the Eastern Provinces to the Eastern States, charged by the Canadian railways, now appears as the most likely development of the situation.

Mr. N. G. Guthrie, who represented about twenty Canadian shipping firms and others at the application before the Railway Commission, has forwarded the Board's decision to his clients and is now awaiting further instruction. When seen by your correspondent he stated the matter of appeal rested entirely in their hands, and it is understood the firms mentioned will hold a meeting to decide as to this.

If an appeal is taken it will be to the Governor-in-Council, which has the right of referring the matter to the Supreme Court to argue on a question of jurisdiction, to send the case back to the Board or to decide for itself.

If such action is taken the appellants will build much arguments on the minority judgment issued by Commissioner McLean, who held that the railways had not proved their case. His judgment was as follows:

"The Board has already in various cases expressed the opinion that where a rate has been in force for a considerable time and business has been built up under this rate, that such rate by efflux of time becomes presumptively reasonable; and the Board has held that when this rate is increased, the burden is upon the railway to justify the increase. This has been limited by the principle which is recognized in the application of the Dominion Millers' Association regarding rates on grain and grain products to the Maritime Provinces, that where rates had been held down below the normal basis by water competition it was permissible to raise these rates more closely to the normal standard when the water competition became less effective. I recognize that the Interstate Commerce Commission has, as a result of a decision by the Supreme Court, given much less weight in recent years to the presumptive reasonableness of a rate of long standing. Its decisions now show that a variety of other factors have to be considered, and the fact that a rate has been in existence for a period of years does not now remove from the applicant the onus of proof ordinarily existing when a rate is attacked as unreasonable.

"The Board, however, has laid down the position that when a rate is increased the burden is upon the railway to justify this increase; and it has further held that general allegations as to increase of cost of service, etc., are not conclusive as to the reasonableness of the rate. Personally, I am of the opinion that the railway should adduce particular information as to the increase of the particular costs affecting the traffic in question, if increase of cost is to have any adequate weight in justifying the reasonableness of the rate attacked. In a recent decision of the Interstate Commerce Commission, the following language occurs:—

" 'Defendants introduced some testimony as to the increased cost of transportation by reason of higher price of equipment and greater wages paid employees, but such statements can have little weight when presented in the abstract with no attempt to allocate charges or consider corresponding reductions in the cost of transportation resulting from greater efficiency.'

"The railways state in the present case that it is impossible to so segregate cost as to give this information. That may be so, as the statistics of the companies are at present kept. Not being convinced that the companies have conclusively discharged the onus which it seems to me rested upon them, I am unable to agree in the disposition recommended by the majority of the Board."

The majority report, which was written by Chairman Drayton and endorsed by the other members of the Board, with the exception of Commissioner McLean, contains one statement which the pulp wood interests who figured in the application object to. This is where the judgment states that it had been urged that a discrimination would result against the American shipper, and proceeds to argue against this contention of the shippers. The latter state they never advanced this argument, but claim instead that the burden will fall principally upon the Canadian producer.

The report of the pulp wood judgment in the last issue of The Pulp and Paper Magazine did not mention one small victory gained by the shipper and referred to at the conclusion of Chairman Drayton's judgment. It is a matter of local interest, restoring a rate on poplar west of Ottawa. The section of the judgment referring to it states as follows: "Objection is made to the withdrawal of the rates from the Canadian Pacific Railway stations west of Avonmore to and including Smith's Falls. While there may be little spruce along this section, at least one of the applicant firms is particularly interested in poplar, of which, it is stated, large quantities will move. The C. P. R. expressed its willingness to establish rates on this traffic as required, but it is not just that shippers should be expected to wait thirty days before they can use the rates, even if granted. No good excuse was offered for the cancellation; and as the rates from Avonmore and stations immediately east are not being changed, those up to Smith's Falls must be restored."

One effect of the increase predicted locally will be that pulp wood areas accessible by water will be bought up in preference to those on railway lines only, and will in consequence of the increased rates have somewhat of an advantage over the latter.

Very little pulp wood is shipped from Ottawa to American points, although J. R. Booth and others are large shippers of the manufactured article, pulp and paper, so that the increase does not directly affect shippers in this city. Indirectly, however, it does and in a

way to meet with their approval. As already intimated in former letters, Booth and other Ottawa firms are by no means averse to the increase, which will help to eliminate the competition of American firms who, having bought up large areas of Crown lands in Ontario and chiefly in Quebec, have been shipping therefrom at the former low rate to their mills on the other side of the border. With the increase in rate Canadian paper manufactured here will be in a much better position to compete with the American article, which will be increased 56 cents per ton as a result of the increased freight on raw material.—Mac.

NEWFOUNDLAND NOTES.

Special to Pulp and Paper Magazine.

The output of pulp and paper by the Albert Reed Co., operating at Bishop Falls, and the Anglo-Newfoundland Development Co., operating at Grand Falls, for last six months of last year amounted in value to over a million and half dollars. The product of those two concerns alone amounts to one-third the value of all our fishery exports. The pulp and paper industry in Newfoundland, however, is only in its infancy as yet. There are projects on foot now which in a few years will exceed in value that of any other industry in the country.

As much as 80 cords of pulp wood have been cut from a single acre of land, while it is not at all rare to find areas which would yield from 30 to 50 cords to the acre.

Owing to some slab ice getting in the gratings the mills at Grand Falls closed down for a few days early in January. Since then, however, they have been running without interruption.

Six additional pulp grinders were installed at Grand Falls during the past year. Two more papermaking machines were also installed in the same concern. This completes the original plans of the mills there.

The company operating at Grand Falls, at which Lord Northcliff is head, cleared a profit of almost a quarter million dollars for their last fiscal year. This was earned on an output only about three-fifths of the present capacity of the mills.

The Horwood Lumber Company are erecting a pulp mill at Campbellton, in the district of Twillingate, as are also those of Bishop Falls and Grand Falls. The Horwood people have erected a wharf 350 feet long, 28 feet wide, with 29 feet of water, and have erected a mill with concrete floors and basement. Some of the machinery is being put in place, and the rest will be delivered in the spring. A number of dwellings for the officials, together with stores and warehouses, have been erected, and others are in course of erection. A reinforced concrete dam is being erected. It will be 1,070 feet long and will back up water to a depth of twenty-five feet. Over two-thirds of this dam has been completed; the balance will be pushed to completion early the coming spring. This mill will have a capacity of 10,000 tons of pulp per annum, and will be in operation early the coming summer. They now have about 200 men employed cutting pulp wood.

H. Crowe has a larger gang of men cutting pulp wood this winter than at any previous year, and hope to make a record season.

The A. N. D. C. people have about 1,200 employed cutting pulp wood, and their output will reach 150,000 cords.

Another large paper warehouse is under construction at Botwood.

The s.s. Tritonia took away the first shipment of paper from Botwood this year. She sailed about the middle of January for London with a full cargo of pulp and paper.

INTERNATIONAL.

Special to Pulp and Paper Magazine.

New York, N.Y., March 8, 1913.

The International Paper Company last Monday issued its pamphlet report for the year ended December 31, 1912. The last previous report covered the twelve months' period ended June 30, 1911. The present report shows net earnings of $3,238,359.14, as against $2,887,402.00 in 1911. The balance available for preferred dividends was $1,197,678.98, equal to 5.34 per cent. on the preferred stock, as compared with 5.29 per cent. earned the previous year. The balance sheet as of December 31, 1912, shows total assets and liabilities of $72,862,900.11, against $71,946,698.00 in 1911. The value of material and supplies on hand was placed at $7,092,552.82, as compared with $6,274,388.00 the previout year.

President P. T. Dodge, in his remarks to the stockholders, says:

"The volume of business done was satisfactory. Net profits, after deducting expenses, depreciation and other charges, were $1,197,677.98.

"The paper industry is passing through a period of severe trial, owing to tariff changes, the establishment of competing mills in Canada, the increasing cost of wood, and the refusal of Canada to permit the exportation of its cheap wood for the use of the United States manufacturers. These and other conditions which injuriously affect prices and profits, necessitate many changes in the properties and methods of this company to safeguard its interests through future years. These matters are receiving careful consideration, and, although dividends are affected for the time being, it is believed future results will justify the conservative course of the management."

* * * *

The International Paper Company and other big local paper manufacturers are much concerned in the decision of the Dominion Railway Commission, which has, after four months, issued its order in regard to the proposed increased pulp wood rates between eastern United States and eastern Canada, by the Canadian railroads. The Commission declared the rates reasonable, but postpones their effective date until August 15th next. The Board did not decide unanimously. Commissioners Mills and Goodeve, and Assistant Chief Commissioner Scott upheld the judgment of the International Paper Company et al v. Grand Trunk Railway Co. et al, regarding international pulp wood rates, while Commissioner McLean fought against it. The former referred to the increased cost of railway operation, and concluded that pulp wood has not borne its proper share of the increase, especially when the apportionment of the through rates between two, three or four carriers is considered.—J.

The Spanish River Pulp and Paper Company, are installing new boilers at their Sturgeon Falls mill.

UNITED STATES NEWS

Special to Pulp and Paper Magazine.

Several prominent engineers of the New York Central Railroad Co. were in Ogdensburg, N.Y., last week and made surveys at the site of the pulp wood terminal to be erected by the recently incorporated Ogdensburg Pulp Wood Company, in which many northern New York paper makers are interested. It is stated that the new terminal will be ready to unload vessels by the middle of May. Paper mill owners at Carthage and Pyrites who will be served by this company have already made arrangement for the transportation of their wood from the lower St. Lawrence to Ogdensburg during the coming summer. The company plans later to own its own boats for the transportation of pulp wood to Ogdensburg from lands in the lower St. Lawrence region which it has leased. The capacity of the terminal will be a thousand cords per day. At a meeting of the company last Thursday, James A. Outterson, of Carthage, was elected president; C. D. Hoard, of Ogdensburg, vice-president; F. A. Augsbury, of Antwerp, secretary; and S. L. Dawley, of Watertown, treasurer.

President Edgar G. Barratt, of the Union Bag & Paper Company, issued the following statement at his office on the 19th floor of the Whitehall Building, 17 Battery Place, New York City, on March 5: "The Union Bag & Paper Company did not declare any dividend at the regular director's meeting held to-day. The quarter ended January 31, and up to that time there had not been any improvement in prices of bags." The dividend was passed at the December meeting.

The new warehouse of the Hubbs & Howe Company, of Buffalo, N.Y., has at last been completed and the concern is now moving its stock from the old building, and expects to be ready to do business in its new quarters on and after March 15. The new structure is located at 493-497 Seneca St., corner Albany St. It is six storeys and basement, facing on Seneca St., and running back 140 feet to the terminal tracks of the Pennsylvania Railroad. The construction is of reinforced concrete, absolutely fireproof and built to carry the heaviest possible loads.

Frank L. Moore, president of the Newton Falls Paper Company, of Newton Falls, N.Y., in discussing the logging conditions of the Adirondacks, stated this week that several weeks more of the present weather in the Cranberry Lake region will make it possible for lumbermen to get all of their logs cut during the present season to the skidways ready to dump them into the water as soon as the ice goes out in the spring, and float them to the various mills in this section. There is now plenty of snow and teams are being worked to the limit to get the logs out before the snow goes. While this is the case in the Cranberry Lake region, the lumbermen of the northern part of the Adirondacks have not been so fortunate, for in that section there is no snow on which to haul logs.

The investigations have been carried on during the past three years at the United States Forest Products Labratory at Madison, Wis., in wood distillation, are to be further developed by supplementary work at the University of Washington. The work will also be continued at Wisconsin University and carried on to a greater degree of efficiency, if possible. Dr. L. F. Hawley, of the Wisconsin Laboratory, has returned from the northwest, where he spent several weeks in cooperation with the Washington University authorities in perfecting conditions and getting the investigations under way. A sum of $10,000 has been set aside by the United States forest service at Washington, D.C., for the work in wood distillation in Washington. This fund will be used in the work of obtaining scientific data concerning the utilization of mill wastes, of logging waste and of stunted forest growth. The value of western woods with regard to their adaptation in the manufacture of paper will also be determined and it is expected that many of the experiments heretofore conducted at the pulp wood experiment station at Wausau, where western woods were used, will hereafter be made at the new institution at Washington University. John H. Hickens, of the Wausau experiment station, is at present in Washington and probably will co-operate with the westerners in perfecting the laboratory and plant.

The Grand Lake Company, paper bag manufacturers of Woodland, Me., has received its last consignment of bag machinery and expects to be turning out 4,500,000 automatic bags and 2,000,000 flat and square bags by the middle of March. President Liveright has now plans under way to go into the manufacture of wrapping paper. This company was organized about eighteen months ago and has made rapid progress.

The Ladysmith mill of the Menasha Paper Company at Ladysmith, Wis., has discontinued making newsprint paper entirely, and the machines are now turning out writings, bonds, books and specialties.

Statistics prepared by the United States Government for the month of January, 1913, show that during that period 27,970,242 pounds of mechanically ground wood, valued at $235,818, were imported into the United States. Of this amount, Canada furnished free of duty 21,853,136 pounds, valued at $182,703, and dutiable 1,211,404 pounds, valued at $9,384. There were, during this period brought into the States, 51,392,199 pounds of chemical unbleached pulp, valued at $797,306, and 10,444,713 pounds of chemical bleached pulp, valued at $236,650—Canada furnishing free of duty 3,417,836 pounds of chemical unbleached, valued at $62,288, and 932,602 pounds of chemical bleached, valued at $24,194; duitable 3,385,378 pounds of chemical unbleached, valued at $58,868. Imports of printing paper into the United States during January, amounted to 25,656,946 pounds, valued at $521,649. Of this amount Canada shipped into the States free of duty 21,372,940 pounds, valued at $406,672; and duitable 3,289,367 pounds, valued at $65,819.

In discussing the making of paper and the spruce supply in the State of Maine, Hon. Nathaniel M. Jones, of Bangor, a member of the firm of Partington Pulp & Paper Co., Ltd., St. John, N.B., before the St. John Natural History Society, a few days ago, said:

"The paper industry is working a remarkable change in the disposition of the spruce supply in Maine. As an example of this, it is stated that the Great Northern Paper Co., which in recent years had consumed 50,000,000 to 70,000,000 feet of spruce logs annually, is now using from 90,000,000 to 100,000,000 feet or more a year. This increase has resulted from the additional building of pulp and paper mills, one at East Millinooeket, and one at Dolby Rips. The logs for the Great Northern Paper Co. will include 90,000,000 feet from the Penobscot River, and 10,000,000 to 20,000,000 from the Kennebec waters. The amount of spruce diverted to these mills is equal to the annual output

from the west branch of the Penobscot in the palmy period of lumber production in that stream.

"When the amount of spruce required for other works is added to that consumed by the Great Northern Paper Co.'s works, it can be seen that the bulk of Maine spruce hereafter is to be devoted to paper manufacture, leaving the lumber business of that State, so far as spruce is concerned, a diminished quantity.

"The paper interests have an advantage over the sawmill in that almost any grade of spruce can be used for pulp. Much spruce turns out low grade lumber that must be sold at a corresponding price. On the contrary, it is pretty poor spruce that will not make good pulp.

"The change in conditions that is observable in Maine, the going out of business of the old water mills on the lower Penobscot. The timber owners investing in the pulp and paper mills, the lumber business of Bangor, and other down river points has diminished to that extra extent. Formerly Bangor mills cut annually a maximum of 247,000,000 feet of lumber. The amount of logs below Old Town for the season of 1911 was less than 90,000,000 feet.

"It is a mistaken idea that Canada is one unbroken forest of pulp wood, and it is a mistaken idea with many people that large areas of land mean unlimited amounts of the necessary woods for pulp making. The amount of standing timber in Canada suitable for pulp making is vastly overrated.

"The Canadian land contiguous to shipping points are being fast depleted. The cost of wood is advancing, and duty or no duty, the large consumers of paper must pay a higher price for it.—J.

MR. WILLIAMS, OF WATERTOWN, SPEAKS ON SULPHITE.

Special to Pulp and Paper Magazine.

Kingston, Friday, Feb. 28, '913.

The second meeting in Kingston of the local section of the Society of Chemical Industry was preceeded by a dinner held in Gordon Hall, the new Chemistry Building, Queen's University, on Friday, February 28. About twenty members sat down to dinner, and were joined later by another six to eight chemists interested in the subject matter presented. Among those present were two committee members, Dr. W. L. Goodwin, Vice-Chairman, and Dr. L. F. Guttmann, Professor F. M. Williams, of Watertown, and Professor W. O. Walker, readers of the papers; Dr. E. Richter, of Hawkesbury; A. O. Bowness, of Hull; G. B. Steffanson, of Windsor Mills; A. G. McIntyre, editor of the Pulp and Paper Magazine, Toronto; Mr. Davis, Kingston Tannery; Professor S. F. Kirkpatrick, Professor Willhofft, Dr. Waddell, Dr. Bonner, Messrs. Drury, Bishop, Tuttle and Sterne.

After a few words of welcome by the Chairman, Professor Williams read a short paper, in which he briefly described the manufacture of sulphite pulp. After dealing with the tank methods and the tower system for producing sulphite liquor, he discussed the relative advantages and disadvantages. He mentioned that for the construction of the latter armored concrete, lined with acid-proof tile had been found effective. He also expressed the opinion that a certain percentage of magnesium oxide was beneficial in the sulphite liquor, which later on brought out some discussion, Mr. Richter stating that he had often found that less magnesium oxide went into solution than was originally present in the dolomite. Mr. Williams later on confirmed this. Mr. Williams next described the methods for barking and rossing, and mentioned the waste, amounting to 25 per cent., which takes place in the present methods employed. After a brief mention of the different cooks employed, and pointing out the objectionable features of the sulphite residues obtained, he brought his summary to a close.

Professor Walker then followed with a brief paper on "The Utilization of Waste Sulphite Liquors." Amongst the methods proposed he mentioned the attempts that had been made to obtain a dyestuff by means of aniline or ammonia, the production of alcohol as carried out in Sweden and Norway, and the attempt to utilize the liquor for tanning purposes. In this latter connection he stated that about 19 per cent. seemed available for this purpose, being absorbed by hide powder. However, on liberating this tannin from the hide powder it no longer seemed to have its former properties. He then dealt with the attempts that had been made to utilize it as a binder or dust laying material for roads. He pointed out that the real requirements for proper attack of the problem lay in scientific research carried along the lines of determining the constitution of the products obtained. Having once progressed along these lines it would be easier to find a utilization, among which he mentioned two or three of the above named proposals, as being more promising.

A general discussion followed in which Messrs. Richter, Davis, Guttmann, Steffanson, Bowness and others took part. It was brought out that the utilization of the sulphite liquor for road beds had been tried, and had appeared to be a failure. It was also pointed out that it hardly seemed practicable to try to convert these inexpensive residues into a dye stuff by means of expensive materials like aniline or ammonia. After some closing remarks by the Chairman, the meeting was brought to a close. The out of town guests then adjourned for a general talk to the Frontenac Club, and next day took an opportunity of visiting the Chemical Laboratories of Queen's University.

BEAVER BOARD COMPANY.

(Special to the Pulp and Paper Magazine.)

Ottawa, March 13, 1913.

The Beaver Board Company, the new industry whose plant at Beaverdale, on the Aylmer line just outside of Ottawa, has been in course of construction during the winter, has announced that it will commence operations in two weeks. The new factory is a big brick, one storey building, 500 feet long by 75 feet wide and affording employment for 150 men. There will be two departments, manufacturing and sales and promotion, the former to be in charge of Mr. E. B. Stuart, and the latter to be managed by Mr. A. Smith, with the title of office manager. The president of the entire concern, which has branches in Buffalo, N. Y., and other United States centres, is Mr. W. F. MacClashan of Buffalo, and it manufacturs a fire-resisting material of wood fibre from spruce logs. "Mac."

The Jonquiere Pulp Company, and Price Bros. and Company, Limited, have decided to move its sales and traffic department from the mills at Kenogami, Quebec, to Quebec City.

NEW PATENTS

All patents are specially compiled for the PULP & PAPER MAGAZINE. Those of United States are by Davis & Davis, Patent Attorneys, Washington, D.C. Full particulars with drawings may be had by addressing the Commissioner of Patents, Washington, D.C., enclosing five cents per patent. Canadian patent particulars may be obtained from the Patent Office, Ottawa. In all cases give number of patent. We also carry brief descriptions of important English, French and German patents.

U. S., 1,045,144, H. M. Howard. Device for water-marking paper.

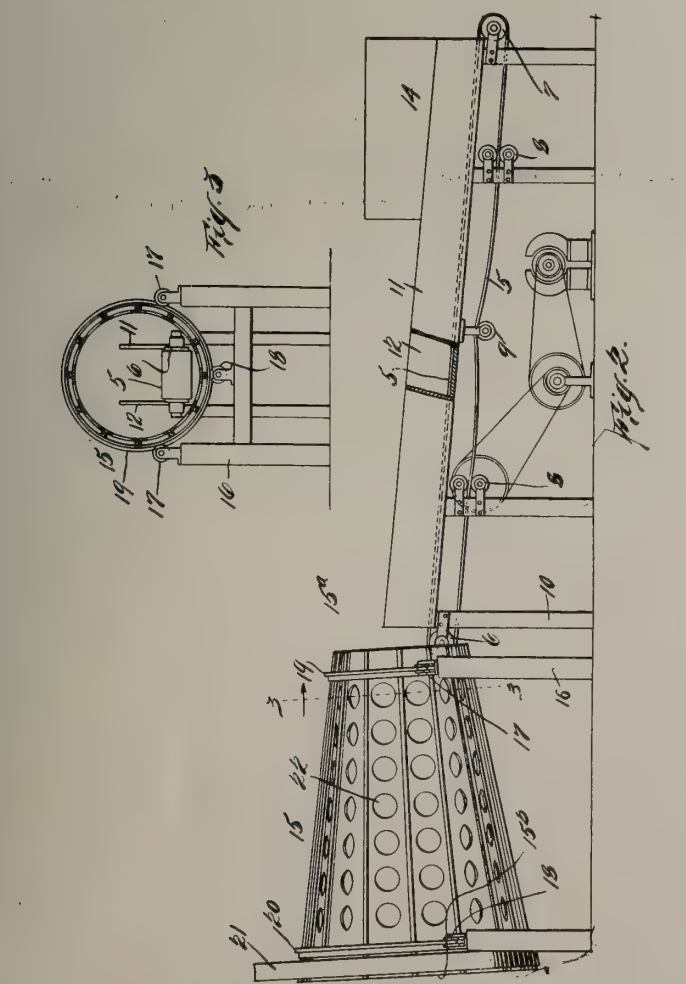
U. S., 1,045,889, E. L. Rinman. Treating black liquors from soda pulp mills with CO_2 to ppt. a portion of the organic matter and then treating the liquor with NH_3 and CO_2 at a temperature favorable for pptg. $NaHCO_3$ and sepg. the latter.

U. S., 1,045,990, W. G. Lindsay. Celluloid substitute, formed of acetyl cellulose combined with ½ per cent. of urea by use of a solvent.

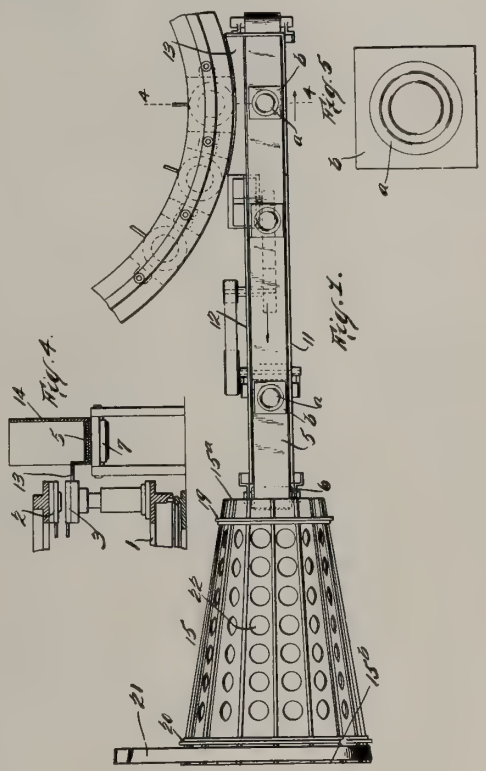
U. S., 1,046,108, C. F. Powers. Machine for seperating water from paper pulp.

U. S. Patent No. 1,052,114.—Apparatus for Delivering and Trimming Pulp Articles, George S. Witham and Isaac J. Witham, of Hudson Falls, New York, inventors. This invention relates to an apparatus for delivering and trimming pulp articles, and may be used in connection with those machines for making articles of paper pulp which machines are provided with a mold comprising two sections to form the pulp article and from which mold the article is to be delivered and the pulp parts which may be attached to the edge of the

1,052,114.



1,052,114.



article trimmed off or removed. It is provided with large openings of somewhat less size than the trimmed pulp articles so that the portions removed from said articles by said barrel will fall through said openings.

United States Patent No. 1,052,927.—Paper-Making Machine, Arthur W. Lamb and Louis E. Vose, of Walpole, Massachusetts, patentees.

This invention relates to fiber crossing devices for paper making machines.

The Fourdriner paper making machine lays the fibres lengthwise of the paper so that it more readily splits than would be the case if the fibres were crossed.

The present invention is more particularly adapted for use on machines of the Fourdriner type and has for its object the provision of novel means for crossing the fibres to thereby obtain a paper having equal strength both lengthwise and crosswise and, if desired, with greater strength crosswise than lengthwise and to obtain a paper with a minimum amount of lateral contraction and expansion. A sheet of paper wherein the fibres are laid more nearly at right angles to the running direction of the sheet, not only has greater crosswise strength, but also a minimum amount of expansion and contradiction crosswise due to any atmospheric changes.

The invention has for its object the provision of means whereby the crossing of the fibres will result, such means consisting in a novel construction and relative arrangement of devices for directing and distributing the flow and regulating the time and position of placement of the respective fibres on the wire screen apron, whereby the oppositely flowing fibres will be prevented from mixing and will be properly laid without interference.

A convenient construction for carrying out the invention consist of guide openings or conduits arranged in respective series, those of the respective series being slanted in a peculiar and novel manner, whereby the stuff passing to one series is deflected in one direction and made to flow therefrom onto the apron, and that passing to the other series is deflected to flow in a crosswise relation to the flow aforesaid, together with novel means for preventing interference of the streams of fibres so that those flowing from one set of guides or conduits will be first matted on the screen and subsequently those flowing from the other set of conduits will be laid crosswise of the fibres.

United States Patent No. 1,053,087.—Paper-Box Machine, Clayton Guy Cooke, of New Haven, Connecticut, patentee.

It is the purpose of this invention to produce a machine which is of a comparatively simple, durable and compact construction, consistent with the work to be performed, and whereby a strip of paper of a proper width may be successively drawn from a roll and fed through the machine to form the inner or slide members of boxes of the above class, in rapid succession, all perfect and complete ready to be filled and slid into the tubes; to provide a machine whereby the blanks may be creased and reversely creased along the lines of the folds of the box to properly break the paper so as to insure the sides of the box being finally disposed at a right angle to the bottom and whereby the folded edges and corners will be formed sharp and square; further to provide means for turning up, over and in the two extreme end portions of the box blank and sticking the same against the inside of the box, thus inclosing the four free ends of the sides which have previously beeen turned in toward each other; to thus construct and form a box in a way to cover all raw ends and edges except the top edges of the two sides of the box, and finally to thus produce a machine for reinforcing and strengthening the ends of a tray or slide member of a paper box, where the greatest strain occurs, as for instance, when pushing in or pulling out the tray, as in the manner of opening and closing the box for the removal of its contents.

U. S. patent No. 1,054,814.—James M. Barienger, of Carthage, New York, patentee. Device for Registering Pulp Blocks, etc. Patented March 4, 1913. This invention relates to new and useful improvements in counting devices for attachment to pulp block conveyers, the object in view being to provide an automatically operated apparatus for registering not only the number of blocks which are conveyed, but also register blocks of different diameters.

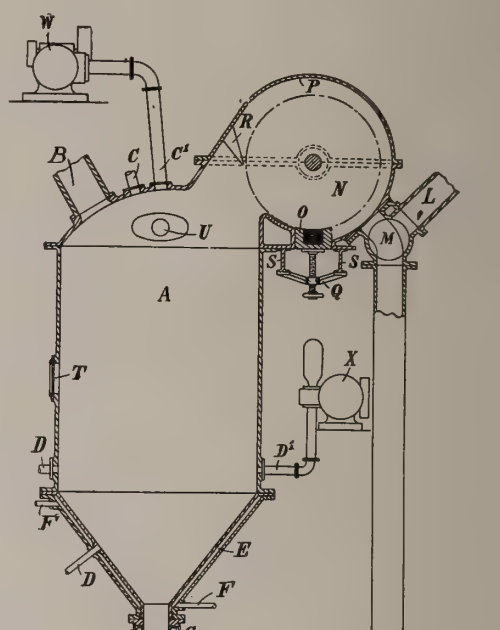
The inventor claims:

A device for registering pulp blocks, etc., comprising a conveyer frame, a conveyer chain therein, plates pivotally mounted upon the frame, and disposed in the path of blocks carried by the chain, registers each provided with a trip, a bracket member secured to each plate, and pivotal spring connections between said bars, tending to return the plates to their normal positions after being actuated by a block.

COMBINED BEATING AND MIXING ENGINE.

A new beating and disintegrating apparatus for wood pulp is the invention of Herman Arledter, of Frodsham, England. The inventor makes the following claims:—

1. An apparatus for treating wood pulp and converting it into a milky-like mass containing water, consisting of a closed chamber, means for heating this closed chamber, means for adding chemicals, means for varying the pressure in the closed chamber from above atmospheric pressure to a considerable vacuum, and means for carrying on a continuous forced circulation through the closed chamber.



2. An apparatus for treating wood pulp and converting it into a milky-like mass containing water, consisting of a closed chamber, means for heating this closed chamber, means for adding chemicals, means for varying the pressure in the closed chamber between a considerable pressure above atmospheric pressure and a considerable vacuum, means for carrying on a continuous forced circulation through the closed chamber, a disintegrating device and through the chamber back to the disintegrating device.

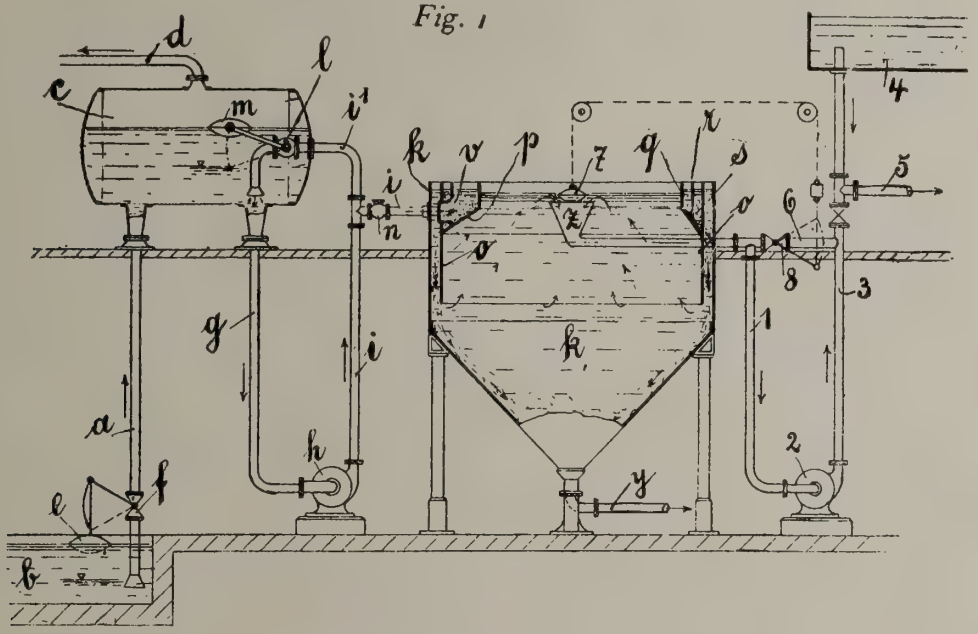
Material and water regaining arangement for paper and paper material machinery, as also for related purposes, where the flush (impure) water is removed before the pulpy liquid. Patented in Germany. Description by Patentee:—

1. Material and water-regaining arrangement for paper and paper-material machinery, as also for related purposes, where the flush water is removed before the pulp liquid is characterized by having the collecting vat (k) on the one side connected with a flush-water box (b) and on the other with pure water tank (4); so that the flush water flows successively in front of the vat (k) through a suction pipe (a), which has a floating

valve (e.f.) into a tank (e) to release the water, with a surface regulator (1m), a suction pipe (g), a surplus force pump (h), a duet (i), with a beck stroke valve (n), also with a return passage (i); and behind said vat (k) a funnel (z) with a surface regulator (7.8), a suction pipe (1), a surplus force pump (2), a duet (3), and a return pipe (6).

2. For the said material and water-regaining arrangement in Patent 1, a collecting vat (11), with an entrance at the side and in its upper part a ring-shaped insertion is built. This ring-shaped insertion (o) has a

Fig. 1

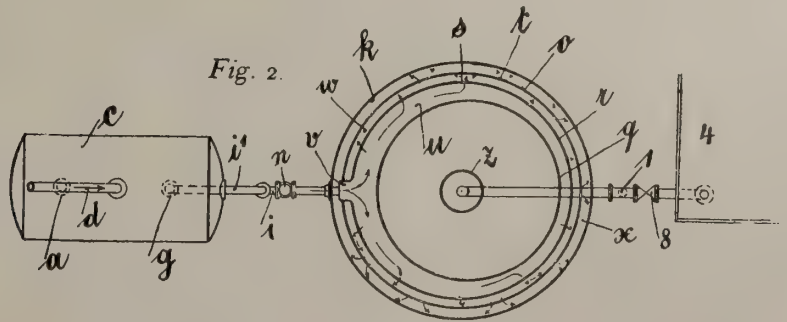


one-sided cone-shaped bottom (p). On this ring are seemed concentric circular walls (p.r), which have openings in their lower ends (t.s) which are arranged in alternate positions in the two walls.

The working of the above machine consists more or less in the fact that the flush water carries with it a great amount of air, and in a seldom stationary condition flows through the unequally divided apartments of the container; also the other known arrangements lack the self regulating apparatus for regulating the flow of the pure and the impure water.

(1) which in conjunction with the float (m) always keeps the surface at the proper height. If the pump (h) forces too much water it flows back into the tank (c), where the float (m) always provides for the proper quantity of water for the pump. The position of the float (m) in Fig. 1 is high, and the valve (1) is closed. Much water is flowing into the pump and because the valve (1) is closed the pump forces no water into the tank but into the vat (k). If very little water enters the tank (c) the float (m) naturally keeps falling as the pump (h) is continually drawing water out of the tank.

Fig. 2.



The suction pipe (a) that enters into the impure water box (b), as for instance in a paper machine, ends at the top of the cylindrical tank (c), which tank is connected by a pipe (d) to an air pump which produces a vacuum in the tank (c). Owing to this vacuum the water ascends into the tank (e). If less flush water flows into the box (b) the surface regulator and with it the floater (e) will sink and close the valve (f) somewhat, and the passage will be decreased. If the flow ceases altogether

But because of the large opening in the valve (1) most of the water will return to the tank (c) and only a very little will reach the vat (k). Since the air pump is constantly pumping air from tank (c), the back stroke valve (n) prevents the air from being drawn out of the vat.

The vat (k) possesses in its upper part a cylindrical insertion (o) which serve to quiet, to properly distribute and to lead off the inflowing water. This has a

one-sided cone shaped bottom (p) on which there are two circular concentric walls (q.r). These walls have openings in their lower ends which are placed in such a position that as the water flows through the openings (s) it strikes the wall (r) and does not flow through but becomes stationary; again the water flows through the openings (t) and strikes the walls of the vat (k) where it again becomes stationary.

The inner circular space (u) is quite wide at the entrance (v), where the water enters, but gradually narrows down toward the opposite side, that in spite of the opening being on one side there will be an equal distribution in the vat. The flowing water in the vat (u) prevents the stuff from settling. It consequently goes through the openings (s) in the square (w) in greater quantities. From here the water flows toward the openings (t) and also prevents settling and flows more quietly through the openings (t) and also properly divided with the already settled material in the space (x) which with its large cross-section provides a quiet and complete departure of the air extracted material.

The vat, as has been noticed, has a conical bottom; the collected material leaves the vat at the bottom through the pipe (y), as for instance to be reworked on the machine. The pure water flows into the funnel (z) and through pipe (1), is pumped by pump (2) three (3) into the tank (4) relatively to the water pipe (5). Between the pipes (1) and (3) a return pipe is situated which contains a shut-off valve (8), which is controlled by the float (7). Pump (2) pumps more water than flows into the vat except in extreme cases, and thence valve (8) is always open, so that the over amount of water pumped flows through and retains the water level in (k) constant. If the surface falls from the stopping of the flush water, the float (7) will open the valve (8) and admit all the water from the pump (2) into the vat. The maintenance of this flow through (6) is from tank (4) through valve (8). The tank (4) can never be emptied altogether into the vat (k), as the float (7) prevents this.

UNITED STAES PATENT No. 1,050,723.

Alcohol from Sulphite Liquor, P.B. Ekrstrom, patentee.

In the process of manufacturing alcohol by fermenting the saccharine matters of sulfite liquor from sulfite pulp, it is difficult to maintain a quantity of free oxygen sufficient for the development of the yeast due to the fact that the liquor contains reducing compounds or compounds which are easily oxidized during the fermentation, that rapidly consume the free oxygen that may be supplied by usual aeration.

The patentee's process consists in adding to the liquor before fermenting the same, a catalyzer for oxidation and then aerating the liquor. The catalyzer effects a rapid oxidation of those compounds which later on during the fermentation process would be capable of consuming the free oxygen in the liquor.

Suit has been brought in the Suffolk County Superior Court of Massachusetts by Alfred L. Sweeney against Nat. M. Jones and Harry Schofield, both of St. John, N.B., and Edward Partington, of Gossop, England. The Ad Damum is $200,000, and is an action for contract or tort. Louis L. de Rochemont, of 60 State Street, is the counsel for Mr. Sweeney. The counsel decline to discuss the issues of the case at this time.

MR. ACER ON U. S. PAPER BRIEF.

(Special to Pulp and Paper Magazine.)

Montreal, March 14, 1913.

Referring to a Washington despatch telling of a new brief filed by the paper manufacturers of the United States, with the Ways and Means Committee for the purpose of showing how enormously the pulp and paper industry of Canada was prospering at the expense of the United States, as a result of section two, of the intended reciprocity treaty, Mr. J. H. A. Acer, treasurer of the Laurentide Company, Limited, expressed surprise this morning at the exaggerations contained in the brief. This gives a list of Canadian companies alleged to have been organized for the purpose of manufacturing pulp and paper in Canada since the serious agitation concerning section two, began about three years ago." A list of companies is given for each province with a total capitalization of $152,280,000, besides another long list of concerns, said to be in course of organization.

In looking over the companies supposed to have been organized since the change in the tariff arrangement, Mr. Acer remarked that there was one large New Brunswick company which had been operating for a great many years. Another company with headquarters in Montreal and capitalized at $4,000,000, he had never heard of. Still another Montreal company named, was not in the pulp and paper industry at all, but was in the decorating business. Similarly a Toronto company in the list carried on a purely local business.

Mr. Acer's conclusion was that the whole list was inflated for the purpose of trying to influence the members of Congress.

"The United States is in the interesting position." he added, "of desiring to get cheap pulp wood for their mills, and also cheap paper for their publishers. Their pulp wood and water power is giving out in the face of their increasing consumption of paper. Canada has the wood and the water power necessary and they simply have to come to us. When the United States paper manufacturers get through with their case, the publishers of the country will have something to say on the matter."

Asked about the alleged "unreasonable demands" of Canada in trying to gain free access to the American market for their paper, and at the same time insisting upon maintaining their policy of export prohibition on pulp wood on Crown lands, Mr. Acer replied that the Hon. Mr. Fielding at the time of the tariff negotiations had told the United States representatives plainly that he could not guarantee anything in regard to the removal of the export duty on pulp wood, as that was a matter over which the provinces had sole jurisdiction. As a matter of fact, the United States had merely made a "bid" for free pulp wood in consenting to the clause being framed as it was.—R.

Montreal, March 14.

The Riordon Pulp & Paper Company, who had a fire in their Merritton mill a few days ago, announced that there has been no serious interruption in their business. The fire was confined largely to the screen room and digestor, and to the chip bins above the digestors. They announce that they will have the entire repairs completed in three weeks time, and in the meantime none of their sulphite customers will be effected by the fire. Incidentally, they mention that the increased capacity of their Hawkesbury mill is larger than the whole of their Merritton plant.—R.

BRITISH TRADE NEWS

(Special to the Pulp and Paper Magazine.)

London, March 10, 1913

There has been an interesting gathering of experts in paper-making materials at the Royal Society of Arts, London, and such subjects as Bamboo pulp, Hedychium, pulpwood and cotton-hull fibres were under discussion. The general opinion prevailed that man was a hopeless prodigal in squandering his industrial resources without any regard to the present or to the future. On the other hand, it was stated, nature was the infinitely laborious and painstaking economist. The papermaking prospective was an opposite illustration. These words reading between, lines spell "conservation"—a policy which the president of the Wood Pulp Association, Frank Lloyd, propounded at the last gathering of pulp men in London, when he appealed to all timber producing countries to conserve the forests for the sake of raw materials. The principles of conservation permeated the whole gathering of experts and some men spoke very strongly on the subject. Charles Cross, B. Sc. F. I. C., head of the famous analysts, Cross and Beavan, mentioned general exploitation of useful products elaborated by the plant Cryptostegia Grand flora. The plant is one of the Astle piads and secreted a nibber-yielding latex and, in addition, elaborated a bast fibre of exceptional properties as a cellulose. "It was of "A," or cotton class in chemical constitution and in length," observed Mr. Cross. "The plant is of extraordinary vigor," he added, "and required little soil nourishment growing 15 feet from seed in one year. With 5,000 plants to the acre, cultivated after the manner of hops, the agricultural balance-sheet is a very favorable one. The matter is in the hands of an Anglo-American Syndicate, under the headship of Professor Charles S. Dolley." The results of the research work of this syndicate will be watched with keen interest by those engaged in the trade of raw materials for papermaking, as crop plants are looked upon as income and percunial as capital in a special sense.

Within the past few weeks further indications of the prosperity and progress of some of the British paper mills have come to hand in the shape of annual reports and balance sheets. Olive and Partington, of which firm Sir Edward Partington (President of the British Papermakers Association and a well-known personage in Canada), is president, in their report for the year ended December 25, show that the gross profits amounted to £67.873 and to this is added £8,574 from the previous year. A final dividend of 10 per cent. on the ordinary shares, making 17½ per cent. for the year, was recommended.

A small mill in Ireland, known as the North of Ireland Paper Mill Company, Ltd., made last year a net profit of £13,000 in round figures and paid 10 per cent. dividend along with 1¼ per cent. bonus. Mr. Kent, in the South of England, C. Townsend Hook and Company, Ltd., carry on papermaking and their trade for 1912 shows a profit of £27.372. Their net profit reaches £19.535 compared with £17.822 in 1911. From Scotland comes the report and balance sheet of the Culture Mills Paper Company, Ltd., which shows a profit on 1912 of £10,032 and the disposable balance of £12,766. The dividend, which has been the same for the past three years, is 5 per cent. The reports of these mills cover the United Kingdom and they indicate the success that has attended mills last year, notwithstanding the labor troubles and the increased cost of raw materials.

England of late is in a very unsettled state as regards the labor market. The paper mill owners are at present trying to solve the problem of meeting the wishes of their employes in regard to shorter hours of working, and if something definite is not soon done it is feared that the men will cease work. Negotiations are still in progress and in all probability another month will decide matters. Meantime the country is threatened with another great railway strike similar to what was experienced two years ago. A guard on the Midland Railway of England was ordered to put extra goods wagons on his train and he declined to carry out the order on the grounds that his brake power was not sufficient to control the train. He has been dismissed for disobeying his writen instructions, notwithstanding the fact that the regulations would not allow him to put on the extra wagons ordered. If anything happened the train the guard would have been the victim and the railway company would have escaped. This trifling offence has caused great interest and the Government is now intervening to avert a strike, which would be of a national character if it comes off. A strike will be a serious thing. It will mean that the raw materials from Canada and other countries will not reach the paper mills; it will mean a shortage of fuel for mills and the dislocation of freightage and the paper industry generally will suffer considerably. The only hope is that the Government may settle matters by ordering the railway guard to be reinstated. Since the last two great strikes in England the Board of Trade have had a commission in Canada getting "tips" on the Dominion's law in dealing with industrial troubles and a Bill will eventually be presented in the House of Parliament to settle all differences. Canadians in the pulp and paper trade, who export to England would do well to keep in touch with their clients on this side of the Atlantic, with a view to ascertaining information as to what would be the result of cargoes should the strike take place. Last time wood pulp and paper were kept lying for weeks untouched at the various ports.

The establishment of a Wood Pulp Association in Canada on similar lines to British Wood Pulp Association, is gladly welcomed in England. Pulp men here say that such a body is badly needed, as it will not only develop trade but prove most useful in supplying numerous wants. It could also work in harmony with the British Pulp Association, which keeps in touch with similar bodies throughout the world.

Tripoli was an isolated port during the war between Turkey and Italy, as regards raw materials, viz., Esparto. It is now reported that experts are leaving the port and this week a large consignment of Esparto reached England which will be gladly received in the paper making industry. The fact that Tripoli fell out of the market of supply, seriously affected last year's net returns, not to speak of the loss to importers.

John Hargraves, paper mill owner, of Manchester and Stalybridge Mills, and a very prominent member of the Manchester City Council, was on February 27th. sent to jail for six months for conspiracy with two of his clerks. The clerks have been discharged. Hargraves, who is 65 years of age and a well-known paper man, faked certain books and documents for the purpose of giving evidence in an action against him by a coal company, which he lost. After the action the documents were unfounded and then Hargraves was arrested and prosceuted by the Public Prosecutor.

SPANISH PAYS DUTY.

Free entry of paper under the Canadian Reciprocity Act has been denied by the Treasury Department to the Spanish River Pulp and Paper Mills, Ltd., of Ontario.

Recommendations had been made to the Treasury that this mill, under the authority of the Ontario Government had been permitted to manufacture paper from wood cut on Crown lands without restrictions and, therefore, that this paper should be admitted free to the United States.

The Treasury holds that there are contractual restrictions placed on the paper. The restrictions mentioned were, the terms of contract made by the paper mill whereby it was agreed to operate a certain number of paper machines to manufacture a specified quantity of paper, and to employ a specified number of hands in cutting the wood and in manufacturing the paper.

KINLEITH PAPER COMPANY.

The annual meeting of the Kinleith Paper Mills, elected the following officers: W. J. Gage, president; W. P. Gundy, vice-president and general manager; C. S. Patterson, secretary-treasurer; F. H. Gage, sales manager; A. Briggs, superintendent. During the past year a new beater room was built and several new engines installed. The plant at St. Catherines has also been electrified. The output has also been somewhat increased.

H. M. PRICE & CO. FAILS.

Montreal, March 14, 1913.

The announcement was made this week that H. M. Price & Co., lumber merchants, of Quebec, had failed, with liabilities of $400,000. The failure was due to a demand made by the Eastern Townships Lumber Company that the firm should go into liquidation for the benefit of their creditors. The failure is largely due to the fact that Mr. Price, who is the sole partner in the concern, has been ill for the past year, and was not able to give his personal attention to the affairs of the company. While the liabilities of the company will amount to $400,000, it is believed that there are considerable assets, as the company had extensive limits on the north shore of the St. Lawrence, besides other lumber and pulp wood interests. It is expected that the liquidators will be able to pay 100c. on the dollar. This firm has no connection with Price Bros., Limited, who are also located in Quebec.—R.

OTTAWA NOTES.

Ottawa, March 14th. — The Laurentide Company, Limited, has deposited site and plan descriptions for its proposed hydro-electric developments at Grand Mere, Que., on the St. Maurice river, with the Railways and Canals Department, and has applied to the Governor-General-in-Council for approval of them.

A trading business in pulp wood and pulp, sulphite, etc., will be done by the Eastern Canada Lumber & Pulp Company, recently incorporated here with $50,000 capital. The incorporators are Messrs. Aubrey Rowan-Legg, manager of the Union Bank here; George F. Perley, manager of the Capital Office Supply Company; R. W. Dawson, agent; George Thompson Radmore, contractor, and W. C. Greig, barrister. Interviewed by your correspondent, a member of the new firm announced that it would do an agency business, buying pulp wood principally, from the Gatineau valley and selling it. Contracts have already been secured with United States mills, and in spite of the increased freight rates on pulp wood, the company will handle this class of shipments largely.

The frequent snowfalls of late have removed all uncertainty as to the supply of road making material, and lumbermen are hoping for an extended period of snow and cold, which will help to counteract the effect of former mildness.—Mac.

CONTINENTAL BAG COMPANY.

Ottawa, Ont., March 14.—Mr. J. H. Wright, formerly connected with the Dominion Paper Company of Montreal, and an executive of experience and capability in the paper industry, has been offered and accepted the position of assistant manager of the Ottawa office of the Continental Bag & Paper Company.

Mr. Wright's services have been secured in connection with the entry by the company into the field of foreign and domestic wrappings, krafts, parchments, etc. It will be remembered that a branch warehouse has been opened by the firm in Toronto. A general line is also being installed in the company's branch at Montreal as well as in Ottawa. According to the statement of Manager W. W. Ormsbee, the Continental Bag & Paper Company did a splendid business last year, and it was on this account that it decided to go into this new line.—Mac.

PRICE BROS. ADVANCE PRICE OF LUMBER.

Montreal, March 14.

Price Bros., Limited, the large lumber dealers of Quebec, gave out a statement this week that the advance in the price of lumber has been made necessary by the curtailment of the cut, which, in its turn, was due to the mild weather which prevailed throughout the winter. There is also a brisk demand for lumber from the United Kingdom, which has further effected the price of Canadian lumber. Advices from New Brunswick state that the lumber industry in that Province is showing a decided improvement. There has been a good market developed during the past year or so from Montreal and Eastern Canada, and this has further tended to advance the price of all grades.—R.

PYRITES IN CANADA.

(Special to the Pulp and Paper Magazine.)

Ottawa, March 12, 1913.

Of great practical interest to Canadian pulp mill owners, especially in districts which are easy of access to iron pyrites deposits, is a report just issued by the Mines Branch of the Department of Mines on Pyrites in Canada, with particular reference, it may be said, to their use in connection with the wood pulp industry.

"It may be pointed out that mills located in the Valley of the St. Lawrence River are particularly favored in regard to a guarantee of suitable ore. There are two operating pyrites mines in the Province of Quebec, producing suitable ores and with good shipping facilities. Any manufacturer so located that he could obtain ore from these mines at a reasonable rate should have little hesitation in experimenting with a view to installing the necessary pyrites roasting plant. Such a manufacturer, because of his location, is always in a position to procure foreign ores if for any reason his Canadian ores fail.

Details are given as to plant, etc., necessary to use iron pyrites in the course of which it is mentioned that the plant is much more expensive to instal and requires a higher degree of technical skill to operate.

PULP AND PAPER NEWS

The paper mill of the Dryden Timber & Power Co. started on Monday. The machines started up nicely without any trouble.

Hoyle Lumber Company, Morrisburg, Ont., incorporated $120,000. G. L. Brown, A. Brown, Morrisburg; W. A. Brown, Chesterville.

The Vera Chemical Co., of North Milwaukee, Wis., will open works in Canada, at Freeman, Ont., to manufacture paper sizing under their patents.

The Kennebec Journal Company, of Augusta, Me., has been chartered with capital stock of $96,000 to do a general publishing and printing business.

The British Columbia Sulphite Fibre Co., Ltd., of Vancouver, B.C., pulp manufacturers, have applied for permission to lease lands on Redonda Island.

Newcastle Lumber Mills, Limited, has been incorporated with a capital of five hundred thousand dollars. The head office of the company is in Vancouver.

The Consumers' Box and Lumber Co., Ltd., has been incorporated in Toronto, capital $500,000; also the Cortlett-Simpson Fibre Tires, Ltd., capital $100,000.

J. E. Dubuc, Managing Director of the Chicoutimi Pulp Company, who is on a business trip to London and Paris, will return to Canada about the first of April.

Pacific Box Company, Limited, has been incorporated as a limited company, with a capital of fifty thousand dollars. The head office of the company is in Vancouver.

Mutual Lumber and Shingle Company, Limited, has been incorporated as a limited company, with a capital of $50,000. The head office of the company is situated in Vancouver.

J. Irving, formerly with Wm. Barber and Sons of Georgetown, has accepted a position with the Spanish River Pulp and Paper Company, taking charge of their office at Sturgeon Falls.

Mr. Philip J. Duff, C.E., formerly chief engineer for the Dryden Timber and Power Co., Ltd., has joined the staff of Geo. J. Hardy, 309 Broadway, New York. He will work chiefly on Mr. Hardy's sulphate mills.

W. E. Hurlburt, assistant sales manager of Spanish River Pulp and Paper Company, has taken over the duties of Agent at Espanola, J. G. Mayo, having accepted a position with the Ocean Falls Pulp Company, of Vancouver.

The Bishopric Wall Board Company, which was recently organized, whose main office is at 75 Sparks street, Ottawa, announces that it is in the market for large quantities of chip board, and is ready to pass upon quotations.

In consequence of the fact that the sulphite plants of the province have long been unable to keep up with the demand, the St. Maurice Lumber Company, of Gaspe, Quebec, which recently bought out the Gaspe Lumber and Trading Company, has decided to erect a large sulphite mill this year.

Canada Paper Co. held its annual meeting recently, when the retiring directors were re-elected for 1913. The Board consists of Mr. Jos. Kilgour, President; Sir Montagu Allan, Vice-President; Messrs. C. R. Hosmer, H. S. Holt, Hon. Robt. Mackay, and F. W. Folsom. A satisfactory report was presented.

The Lachute Knitting Company, Limited has just received a new set of Cards, one of the largest in Canada, together with two mules and three more looms which they are adding to their felt mill in order to keep up with the demand for felts. This company has been running three nights per week overtime since November last.

Mr. Joe Crockenberg, night superintendent of the Minnesota and Ontario Pulp and Paper Company's plant at International Falls, Minn., has been appointed superintendent of the Espanola plant of the Spanish River Pulp and Paper Company, and will assume his duties under the direction of J. H. Slater, General Superintendent, about March 15.

Ten per cent. increase in wages for all painters and paper hangers in the city has been decided upon by the Master Painters' Association. This will affect from two to three thousand painters and paper hangers, and it will also mean a ten per cent. increase in the charges for paperhanging on all who want their houses fixed this spring. As the increase is to go into effect on April 1, it will just be in time for the rush season.

The Wayagamack Pulp and Paper Co., of Three Rivers, this month made its first shipment of kraft paper to Australia and New Zeealand, while shipments to New York have been taking place for some time. There has also been a remarkable increase in the domestic demand particularly in the West. The company are operating up to their present capacity, which is about fifty tons per day.

Mr. Alvin Schlarbaum, B.A. Sc., has severed his connection with Messrs. Smith, Kerry & Chace as assistant engineer in the Healy Falls development, to accept the position of hydro-electric egineer for the Riordan Pulp & Paper Co., Ltd., of Hawkesbury and Merritton, Ont. The above company purposes developing about 9,000 horse power on the Rouge River to meet the demand of recent extensions to their plant.

The S. J. Clarke Publishing Company has been registered, to carry out or effect all or any of the objects of the company to which the legislative authority of the Legislature of British Columbia extend. The head office of the company is Chicago. The head office of the company for the Province of British Columbia is at Vancouver. Edward H. Barringer, Vancouver. The capital of the company is fifteen thousand dollars.

The Horwood Lumber Co., Limited, a corporation doing a general lumber and wood working business in St. John's Newfoundland, is building a pulp grinding plant at Campellton, Notre Dame Bay, using the waters of the Indian Arm River for power. Here they have a drainage area of some 15 square miles, with a forty-foot head at the mouth of the river, and a sixty-foot head about three miles inland. The former development only will be used at present, but the latter, with electric transmission, is looked to for future development.

The Horwood Co. is the first purely Newfoundland corporation to embark on the pulp industry in

modern times. Nearly twenty years ago the firm of Harvey and Company, at St. John's, established a pulp mill at Black River on the south coast, but the industry was at that time only in its infancy and methods of operation were but very poorly understood in this colony, so that it is scarcely surprising that the enterprise had but a brief existence.

The company's timber area covers some 200 square miles, in connection with which they also operate two saw mills.

They will install 32-inch grinders. The mill is within 1,200 feet of an admirable shipping pier just constructed with ample water for a large freight steamer.

One of the latest arrivals at The Dryden Timber and Power Company, is F. Moline, from the Wayagamack pulp mill, at Three Rivers, P. Q., who has been engaged on the chemical staff with J. L. Hooper, chief. Mr. Moline is a native of Sweden, where he has had considerable experience in the manufacture of pulp, while Mr. Hooper practised his profession in Cornwall, England.

J. H. Graham, of the U. S. Wind Engine Company, Batavia, Ill., is in charge of the erection of the fire protection and water supply system for the Dryden Timber and Power Company. The system involves the erection of 110 feet 4-post steel tower surmounted by a 50,000 gallon tank. The height of the structure from the ground when completed will be 135 feet.

The Canadian Northern are to be in a position to supply light and power to Port Mann and other points on their line, and to electrify their line from Yellowhead Pass to New Westminster, the C.N.R. is securing water powers at various points. One of their biggest projects is to build two dams across the valley just east of Hope, where the Nicolum River falls into the Coquahalla, and erect a hydro-electric plant which will be able to develop 30,000 horse power. Power will also be sold to industries.

The Abitibi Pulp & Paper Company let contracts this week for the construction of their various buildings at Iroquois Falls, and also for the machinery which is to go into their plant. The company has a sawmill in operation at this point, cutting up lumber which will be used in the construction of their mills. With the opening of spring, construction work on the plant will be rushed, and it will be pushed to completion as quickly as possible. The railroad into Iroquois Falls will be completed by June 1st.

A third concern, which is planning operations in Newfoundland, is the Bay du Nord Corporation, which owns areas inland from Bay du Nord, on the South coast, where it is proposed to establish a pulp mill in the near future. This concern contemplates active operations as soon as next spring opens and probably the year 1913 will see still other pulp and paper concerns actively engaged in the work of utilizing the forest resources of this colony.

The transportation department of the Canadian Manufacturers' Association announces that after a long fight they have succeeded in getting the railways to withdraw the proposed increased rates on lumber imported into Canada from the United States south of the Ohio River. This particularly affects large quantities of Georgia pine imported into Ontario, Quebec and the Canadian West, and means a difference of from one to seven cents per thousand feet, amounting to many thousand of dollars in freight per year.

Paper mills in Washington and California have appealed to the Treasury Department to rescind its order of some time ago, admitting paper from British Columbia free of duty. This request follows the department's recent refusal to abolish the duty on paper from Quebec, Canada, on the ground that Quebec had not removed export restrictions from wood and wood pulp, but only from paper. The Treasury Department has informed the Western mills that if they prove conclusively that British Columbia would refuse to remove export restrictions from wood and wood pulp, the duty on paper would be restored.

The King of Norway has made Mr. C. B. Thorne, manager of the Riordon Pulp and Paper Company at Hawkesburg, Ont., a Knight Companion of the first class of the Royal Order of St. Olav, and the insignia of the order has just been handed over to him by the Norwegian consul general for Canada, Mr. F. Koren, at the office of the consulate in Montreal. A few members of the consular service in Canada hold decorations of the order, but Mr. Thorne is the only private citizen to be so honored. He is a Norwegian by birth, but has been in Canada for ten years, most of which time has been spent in the pulp and paper industry. His philanthropic work among Norwegians making their homes in Canada is stated to be the reason for his being signalled out for distinction by the King of Norway.

PROVINCIAL CHARTERS.

Ottawa, March 14.—Whether a paper and pulp company incorporated under the laws of one province has the right to obtain its raw material and sell its products in another was one of the interesting questions bound up in the Companies case, a dispute of vital interest to pulp and paper as well as all other companies, which was heard by the Supreme Court in Ottawa a week ago. The case concerns, in brief, the respective rights of the Dominion and Provincial Governments in the matter of incorporating companies. According to the British North America Act the provinces can incorporate companies with "provincial objects." The question which the Supreme Court will have to settle is whether the word "provincial" is to be interpreted as confining to territory or whether it has reference to a company which can properly be incorporated by provincial legislation. If the former meaning is taken, then some $320,000,000 worth of companies incorporated in Ontario alone last year and over seventy-five per cent. of which carry on their business outside the province have no legal status. During the hearing the E. B. Eddy Company of Hull was cited as a specific example.

"Could the E. B. Eddy Company, which has mills in the Province of Quebec, come across the river and build in Ontario?" asked Chief Justice Fitzpatrick.

"No," said Mr. A. W. Atwater, K.C., one of Dominion counsel.

"Could it buy pulp wood or pulp in Ontario or contract an obligation to purchase it?"

"Yes."

"If there was a glut in the Quebec markets could the company sell the whole or any part of its products outside?" asked Justice Anglin.

"Yes, they could sell outside if they did not establish a separate agency outside. They could not, however, carry on any part of their manufacturing process," said Dominion counsel.

Judgment in the case has been reserved.—Mac.

RIORDON MILL FIRE.

Merritton, Ont.,—Perhaps the largest fire in the history of Merritton occurred Sunday night, when the plant of the Riordon Paper Mills was damaged to the extent of about $150,000. The cause of the fire is attributed to crossed electric wires in the west end of the sulphite plant. It began about 7 o'clock and was not fully extinguished until 3 o'clock in the morning.

The alarm was first sent in to the Merritton fire company, which responded immediately. They were unable to control the flames and a summons was sent to the Thorold and St. Catharines companies. The combined forces did effective work, and succeeded in checking the flames, which, driven before a high west wind, was the greatest handicap the firemen had to contend with although the cold was also very severe.

The sulphite plant of the mill, was completely destroyed. The loss is estimated at $100,000. A pile of pulpwood is still smouldering and represents another loss of $50,000. The firemen worked hard and succeeded in saving the costly papermaking machines in the plant. The total loss is placed at $100,000 covered by insurance. The most of this is held by Montreal companies.

This is perhaps the worst fire in the history of the village and it was only through hard work of the firemen and villagers that the entire plant was not destroyed.

The damage is not so serious as first reported.

WOOD TOP FLOORS.

Where a hardwood floor is required over a concrete slab, the common way is to lay bevelled screeds about 12 inches or 15 inches on centres, bed these in cinder concrete, over them lay a one inch or two inch rough floor, and on top of this lay the hardwood, 7/8 inch as a rule. An excellent hardwood floor is made by putting down 7/8 inch form lumber on top of the rough concrete, laid diagonally to the finished floor and on top of this nailing the hardwood. This was done on a Government job. However, the boarding is to be laid, the hardwood is much better square edged than tongued and grooved. Where square edged, if the floor boards warp, the edges do not split. If repairs are necessary, a board can be taken out without ruining the floor around it, and it will be found that the boards will wear better when square edged than when grooved.

The boarding should be laid the way of the greatest traffic, that is, trucking should not run at right angles to the floor boards if this can be avoided. When the progress of traffic is definite it will pay to change the direction of the boarding where the turn in traffic comes.

For wet floors do not use maple. Rift hard pine, which is full of pitch, is very much better.

THE MARKETS

TORONTO MARKETS.

Toronto, March 14, 1913.

The snowfall throughout Northern Ontario has been much lighter this year than formerly and unless there is an unusually heavy rain fall during the spring, water conditions will be below normal, as compared with other years. Water Power conditions throughout Minnesota and Wisconsin are particularly low and as a result all surplus stocks of Canadian Ground Wood are being rapidly absorbed. The price of Ground Wood in consequence has advanced very sharply, the ruling price delivered Wisconsin is now $25 to $26.

There is every prospect that Mechanical will rule firmer and continue so. Stocks are already getting lower.

Pulp wood is scarce and prices rule high.

China Clay rules high, but prospects point to lower prices in the next few months. Five new companies recently organized will tend to lower the price.

Paper stock is reported very scarce the world over. All mills in Canada and England have very low stocks, and demand is brisk.

Print is stronger, and chemical continues firm.

The week has witnessed slashing of bag prices and lower grades of wrapping. The Continental Bag opening at Toronto office has affected the bag prices locally.

Quotations (f.o.b., Toronto), for paper pulp and paper stock are as follows:—

Paper.

News (rolls) $43 to $45, according to quantity.
News (sheet) $45 to $50, according to quantity.
Book papers (carload) No. 3 4.10 to 4.50c
Book paper (broken lots) No. 3, 4¼c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2 5c to 5½c.
Book papers (carload) No. 1, 5c. to 6¼c.
Book papers (broken lots) No. 1 5½c to 6¾c.
Writings 4½c. to 7½c.
Bonds, 10c. to 18c.
Sulphite Bond, 6½c. to 8½c.
Fibre, 3c to 4c.
Manila, B., 2½c to 3c.
Manila No. 2 2.85c to 3.50c.
Manila, No 1 3c to 4c.
Kraft, 4c. to 4¾c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $48 to $49, delivered in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.60.
Mixed shavings, 55c.
White blanks, 85c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 85c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.15.
No. 1 print manillas, 60c.
Folded news, 47½c.
Over issues, 55c.
No. 1 clean mixed paper, 42½c to 45c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50.

Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.75.
Ordinary satinets, 87½c.
Floc. satinets, 97½c.

MONTRREAL MARKETS.

Montreal, March 14, 1913.

Markets for all grades of paper and for pulp remain steady and satisfactory. The only commodity which does not share in the improved market conditions, is ground- wood, but dealers state that the outlook for this is better. Stocks of ground-wood on hand are not by any means large, and when the consumption catches up a little more with present supplies, prices are likely to improve. The sulphite market is good. All the sulphite that can be produced is being absorbed, and no stock is on hand either at the paper mills, or sulphite mills in America or in Europe. The European makers of sulphite are asking higher prices than are now prevailing, for future deliveries. This advance in the price of European sulphite is bound to effect the markets here, as Europe ships come 400,000 tons per year into the Unites States, and to a large extent governs the sulphite situation on this continent. The price of news and other lines of paper remain steady, and in brief the market situation is regarded as extremely satisfactory.

The following are the prices for paper, pulp and paper stock, f.o.b. Montreal:

Paper.

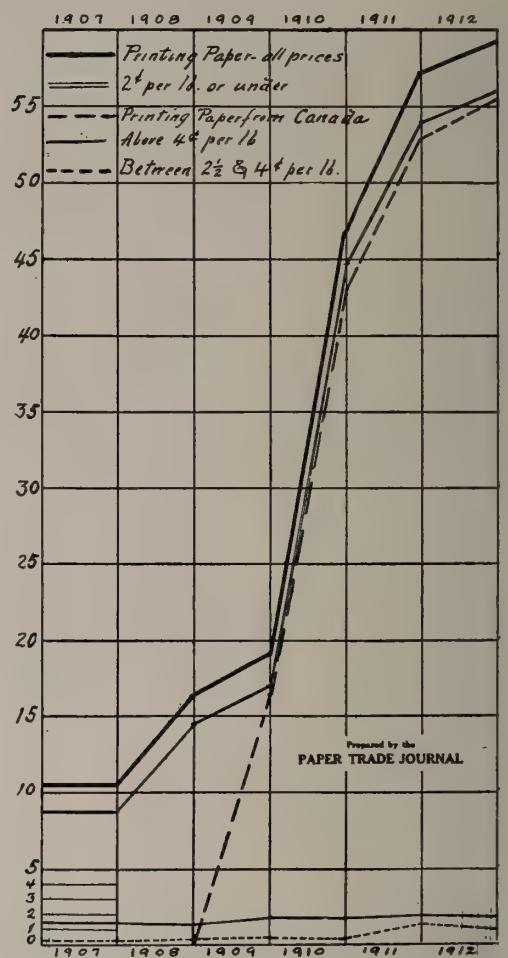
News, $42 to $43, delivered in United States.
News, $41 to $42 for large orders, $45 to $46 for small orders
Newsprint, sheet, $46 to $50 at mill.
Book papers, carload lots, No. 3, 4¼c. to 4¾c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3c. to 3¼c.
Broken lots, No. 2, 5¼c. to 5½c.
Carload lots, No. 1, 5½c. to 6¼c.
Broken lots, No. 1, 6¼c. to 6¾c.

Wrappings.

Fibre, 3¾c. to 4c.
No 2 manilla, 3½c.
No. 1 manilla, 3½c. to 4¼c.
Kraft, 4c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.75 to $1.85.
No. 1 soft white shavings, $1.60 to $1.70.
No. 2 soft white shavings, $1.15.
Mixed shavings, 55c. to 60c.
White blanks, 85c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c. to 55c.
Manila envelope cuttings, $1.05 to $1.10.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 50c.
Crushed news, 45c.
Crushed news—
Good mixed paper, 40c. to 42½c.
Old white cotton, $2.50 to $2.75.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.45 to $3.55.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.55 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.50 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.50.
New light flannelettes, $3.75 to $4.25.
Flock satinents roofing stock, $1.00.



CANADIAN TRADE.

Ordinary satinets, 85c.
Tailors' sweepings, 65c. to 70c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphide, No. 1 unbleached, $48 to $49, delivered in United States.
Sulphite, $44 to $46, delivered in Canada.
Sulphite (Bleached), $51 to $53.

THE BRITISH MARKETS.

(Special to the Pulp and Paper Magazine)

London, March 10, 1913.

The British paper mills, particularly those in the South of England, are still keeping busy in making all grades of papers and the demand is good, except for "news" which experienced a slight decline during the past two weeks. Recent legislation brought in by the Government has added considerably to the output of some of the mills who contract yearly, and some substantial orders have already been placed. A large number of the millowners are now obtaining an increased price for their paper in the usual course of business and the advance will considerably help them owing to the extra cost of coal, sulphite and sulphate, etc. A healthy sign of the progress of the mills is the return furnished by the Government on em-

ployment. It shows that mills employing 21,174 workers had increased their labor to the extent of 1.5 per cent. compared to this time last year, when the state of trade was considered very good.

In the wood pulp trade business is limited just now as the mills are well supplied and very few contracts are being negotiated about. Odd parcels are occasionally asked for and prices are in sellers favor. Sulphite (bleached) has become dearer and so has soda unbleached. The following are about the latest quotations:—

Bleached Sulphite	$57 to $60
"News" or strong quality sulphite	$32 to $35.
Unbleached Soda first quality)	$33 to 33½
Unbleached Soda (strong)	$33 to 33¼

There is a fair amount of business doing in mechanical pulps and prices remain without any alteration. Owing to the high cost of sulphite numerous enquiries are being made for mechanical and considerable sales for prompt and delivery over this year have been effected at prices suitable to the consumer. The following are about the latest quotations:—

Pine, 50 per cent. moist prompt) .....$9 to $9½	
Pine dry (prompt delivery)	$20 to $22

Forward delivery costs about $1 to $3 more according to arrangement.

The position of the paper stock market is again beginning to cause some anxiety. Less than a month ago things began to look bright, but during the past week rags particularly assorted collections, were eagerly sought after and the result is that stocks are allowed to get very low. Reports from France, Belgium, Germany and other supplying countries, are not at all satisfactory. They say that stocks are scarce and prices keep going up. In London and Manchester paper stock men are asking increased prices and cannot keep pace to the demand.

During the month of February Canada imported 63 tons of rags and paper stock from United Kingdom and the United States of America 3,212 tons. The only importation of mechanical wood pulp into the United Kingdom from Newfoundland, was one cargoe of 1,495 tons, no other shipment coming from Canada. The U. S. A. shipped 165 tons of bleached chemical dry.

China Clay and other papermakers' materials of the mineral class are still commanding high prices and the demand contiues strong. It is rumored that in about six months time the price of China Clay will be lowered considerably in the price as by that time the production will have considerably increased by the opening up of new works. In this connection it should be mentioned that in the month of January five new companies were formed to produce China Clay, and their registered capital is £44,000.

In the chemical trade there is fair activity and bleaching Powder is unchanged at $24½ for export F. O. B., Liverpool. Caustic Soda is alo in good request at $48½ per ton and Ammonia Alkali is experiencing a simlar position in the market.

During the hearing of a legal action in the London Law Courts it was stated that 1,745 tons of India paper was sold to the Encyclopaedia Britannia Company, Ltd., at 15 cents a pound. This is about the average price for this paper on contracts.

NEW YORK MARKETS.

(Special to Pulp and Paper Magazine.

New York, March 13, 1913.

Though prices continue to be maintained on a very strong basis and in many cases are showing a still further upward tendency, the local sulphite market is inclined to be sluggish. Importers and dealers in domestic grades are receiving comparatively few inquiries, and salesmen returning from the road report that they are finding mills both in the east and west pretty well stocked up. Movement at present is chiefly confined to old contract orders and only a few orders for additional lots were recorded since our last report. Arrivals are going forward immediately and very little stock is in local hands. Records at the Custom House of this Port report 35,900,000 pounds received during February, as against 17,650,000 pounds in January. Both domestic and foreign sulphites are very scarce and comparatively few offerings are being made. American mills in most instances claim they are contracted for their output for the balance of the year, while the foreign makers appear to have orders on hand for a good part of 1914.

Conditions governing the Mechanical Ground Wood Market are practically unchanged. Grinders throughout the country are being operated on a good basis and everybody seems well stocked up. Those mills making pulp for sale have heavy stocks on hand and very little outlet for their product. Though prices are named at $14 to $16 per short ton at the mill, these values are weak and subject to a perceptable easing should a buyer enter the market.

News and the cheaper grades of waste papers are selling freely. Locally a brisk demand prevails for these grades, and the market is devoid of heavy stocks. Packers are being taxed in filling orders and in many cases are several weeks behind in their deliveries.

The better grades of waste paper are also in active demand and prices of all descriptions are ruling on a very firm basis.

Both old and new rag stock are reflecting a steady demand Thirds and Blues in the former and New Light Blue Shirt Cuttings in the later are the leaders. Collections in all descriptions are somewhat improved but are yet insufficient to cause any surplus stocks to be reported.

Bagging stocks are ruling very firm. The recent advances, due to increased freight rates and the small supply of the jute crop in 1912, are being well maintained, and the present range of prices are too high to make these grades profitable to the paper manufacturer. Movement, therefore, is chiefly against old contracts, and very little, if any, new business is being transacted.

Local prices of the various grades of Sulphites and Ground Wood Pulp, old waste papers, rags and Bagging, are given herewith:—

Pulp.

Ground Wood, No 1, $16 per short ton, f.o.b. mill.

Ground Wood, No 2, $14, per short ton, f.o.b. mill.

Unbleached Sulphite, Domestic, $2.15 to $2.30, del., Foreign $2.05 to $2.30 ex. dock, N. Y.

Bleached Sulphite, Domestic, $2.15 to $2.30 del., Foreign 3c to 3.25 ex. dock, N. Y.

Bleached Sulphite, Foreign 2.60c to 3c.

Bleached Soda, Domestic, 2.20c to 2.35c.

Kraft, 2c to 2.20c.

Paper.

The month of February proved to be only an average month in the Eastern paper industry and failed to develop the spurt that many of the manufacturers had predicted. Many of the mills in northern New York and Massachusetts, however, found plenty of business to keep them busy, though at no time were they rushed with orders. The inaugural last week and President Wilson's message outlining what he expects to do at the special session of Congress called for April 1st, and a general clarifying of the political atmosphere, is expected to change the general business situation for the better. The paper industry in particular will undoubtedly be

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1 Bullock exciter for above—110 volts, 1,250 R.P.M.
1 75 H.P. Westinghouse induction motor with slide rails and secondary controller. Starter for big motor.
2 Westinghouse transformers 150 K.V.A. each, oil insulated and water cooled. 12,000 volts primary and 440 volts secondary, 3 phase, 25 cycle.
1 Switch Board with instruments.
2 Sandy Hill double cylinder wet machines 72″, Heavy type.
1 Deming triplex pressure pump 5 x 6.
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4 Centrifugal pumps.
1 84″ Seybold ''New Century'' Cutter.
1 42″ ''Acme'' Cutter.
1 40″ ''Acme'' Cutter.
1 Wood tub beater, 42″ roll.
1 Set Calenders—2 rolls—with frames and drive.
1 Cut-off saw frame—Ryther & Pringle.
5 Induction Motors. H.P. 30, 40, 75 and 150.

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placed on a more satisfactory basis, and those mills who have been holding off for many months awaiting the change in administration will now probably go ahead with their plans. The news print end of the industry is holding up remarkably well. Western mills claim to be maintaining their prices but the eastern manufacturers are competing keenly for new business. Consumers are drawing steadily on their contracts and in many cases are taking on small additional lots to tide them over. The board industry is enjoying a normal to very good business in the east, and prices are being maintained on a very firm footing. Strawboards, however, are inclined to be sluggish in the west and general easing off in prices is heard of. Tissues are showing a slight improvement in the east. Prices are being firmly maintained and the manufacturers are anticipating an advance in the very near future. Writings, Bonds, Ledgers and Linens show a fair demand with prices holding firm. Kraft mills are far behind in their orders, and manilas and fibres are moving in a seasonable way. Prices of the various grades, as reported in New York to-day, are given herewith:

News, rolls, transient business, 2c. to 2.10c., f.o.b. mill.
News, rolls, contract renewals, 2c. to 2.05c. f.o.b. mill.
News, sheet, 2.15c. to 2.25c., f.o.b. mill.
Book papers, car lots, C. & S. C., 4c. to 4.20c., f.o.b. mill.
Book papers, car lots, M.F.S., 3.75c. to 3.90c., f.o.b. mill.
Writing paper, superfine, 11c. to 13c., delivered east of the Mississippi River.

Writing paper, extra fine, Lo ½c., delivered east of Mississippi River.

Writing paper, No. 1 fine, 9c., delivered east of Mississippi River.

Writnig paper, No. 2 fine, 8c., delivered east of the Mississippi River.

Writing paper, Engine Sized, 4 3-4c to 8c., delivered east of Mississippi River.

Bond paper, 6c. to 24c., delivered east of Mississippi River.
Linen paper, 7c. to 18c., delivered east of the Mississippi River.

Ledger paper, 8c. to 30c., delivered east of the Mississippi River.

Manila, jute, 4¼c. to 5c. delivered.
Manila, wood, $2.40 to $2.80 delivered.
Kraft, No. 1, 3.65c. to 4c., f.o.b. mill.
Kraft, No. 2, 3.10c. to 3.82½c., f.o.b. mill.
Screenings, 1.75c. to 2.25c., delivered.
Boxboards, News, $30 to $32 per ton, delivered.
Boxboards, Chip, $28 to $30 per ton, delivered.
Boxboards, Straw, $32 per ton delivered.
Wood Pulp Board, $42.50 to $45 per ton delivered.
Tissue, White, Cylinder, 40c. to 42½c., delivered.
Tissue, White, Fourdrinier, 45c. to 50c. delivered.
Tissue, Jute Manila, 50c. to 55c. delivered.

Agalite and China Clay.

New York, N.Y., March 13, 1913.—In discussing the asbestine pulp and agalite situation in the United States, a prominent manufacturer while visiting the local trade to-day, stated that at present is an unprecedented demand for agalite now prevailing among the paper manufacturers. ''Paper manufacturers are now beginning to realize,'' he said, ''that agalite is one of the best fillers on the market. This is due chiefly to its whiteness and retention. The demand is exceptionally keen at prsent, and mills throughout the country making it are running night and day in order to keep up with their orders. None of the mills have any stocks on hand to speak of, and many of them are far behind in their deliveries. Prices are exceptionally strong, and none can be had for less than $9.50 per ton, f.o.b. mill, and quite a few makers are not contracting for new business under $10 to $11.

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1-2000 K. W. Edmonton	2-750 K. W. Medicine Hat	2-500 K. W. N. S. Steel & Coal Co.
3-2000 K. W. Dawson City	1-750 K. W. Edmonton	2-400 K. W. Regina
2-1500 K. W. Regina	1-750 K. W. N. S. Steel & Coal Co.	1-400 K. W. Lethbridge
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"The scarcity of china clay in England, due to the prolonged bad weather and strikes during 1912, in which the output was severely curtailed, and the inferiority of the domestic clays, has caused many of the china clay importers to enter the agalite market for supplies to fill their clay contracts. , Consumers would do well to anticipate their wants for the future as early as possible, if they want to have their deliveries in a reasonable time."

LATE NEWS.

Hinde & Dauch Paper Company's new factory on Hannah avenue, Toronto, will cost $80,000.

It is of brick and steel construction four storeys high. The capital stock has been increased from $100,000, to $250,000 by the creation of 1,500 shares of new stock of $100 each.

* * * *

Smart-Woods, Ltd., have acquired the business and property of the Montreal Tent and Awning Company.

* * * *

John Norris spent a few days in Montreal recently, in connection with the new pulp wood export duties difficulties.

* * * *

The Canadian Paper Waste Company, Toronto, were visited by fire this week. The contents of the sheds were old rages and waste paper.

The damages, are estimated by the proprietor, Mr. J. C. Steinberg, at about $2,000.

* * * *

The sale of 267,000,000 board feet of timber in the Kaniksu National Forest, Idaho, is proposed.

The Federal Government will receive about $650,000 for the timber, of which $225,000 will go to the benefit of the State for public schools and good roads.

The minimum stumpage price of $5 specified for the white pine of these logging chances is unusually high, because this western white pine is the most valuable stumpage on the National Forests. The timber is easily worth the price, and no difficulty is anticipated in securing bids on the basis named.

* * * *

The tallest ship in the British Empire, the steel bark 'Dumfriesshire,' is now loading lumber at the Canadian Western Lumber Company's mills, B. C., having power. The ship will sail for Cape Town, South Africa, with 2,500,000 feet of lumber.

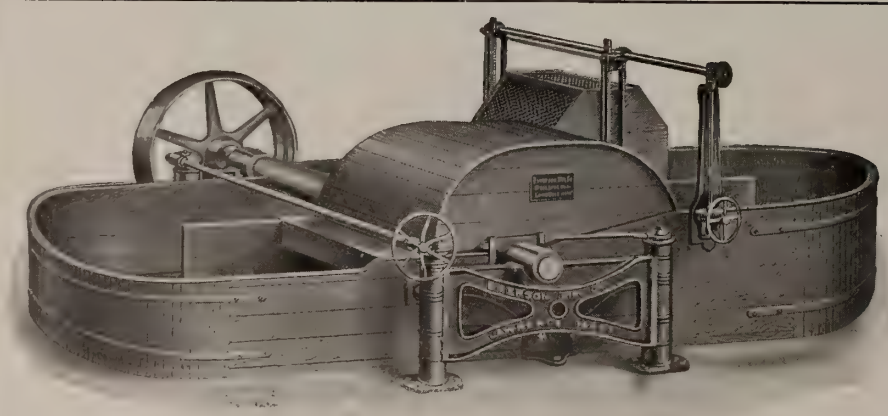
Mr. H. J. Mackin, sales manager for the Fraser Mills, states that 25,000,000 feet of lumber will be exported by his company to Australia and South African ports during the next six months.

* * * *

Standard Lumber Company, Ltd., Sturgeon Falls, Ontario,—incorporated with a capital of $100,000. Lumber and pulp manufacturers. Incorporators: Athol George Robertson, James John Kew and Earl Robinson Malty (32 Harvard avenue), all of Toronto, Ontario.

* * * *

The town of Dryden, Ontario has passed a by-law to take over the lighting system of the town, from the Dryden Timber and Power Company, and operate the same as a municipal plant. At the same meeting they appointed a committee of two aldermen to arrange a civic celebration of the completion of the Pulp Mills.



EMERSON MANUFACTURING COMPANY

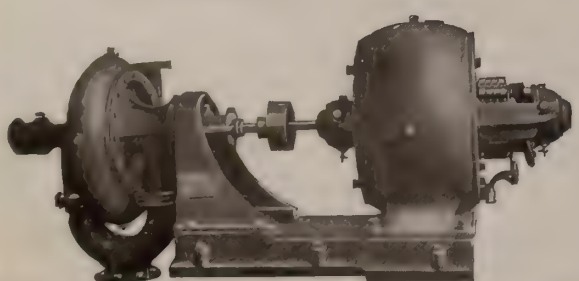
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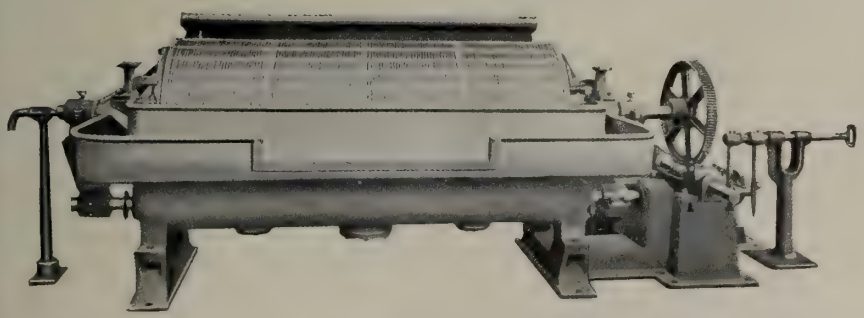
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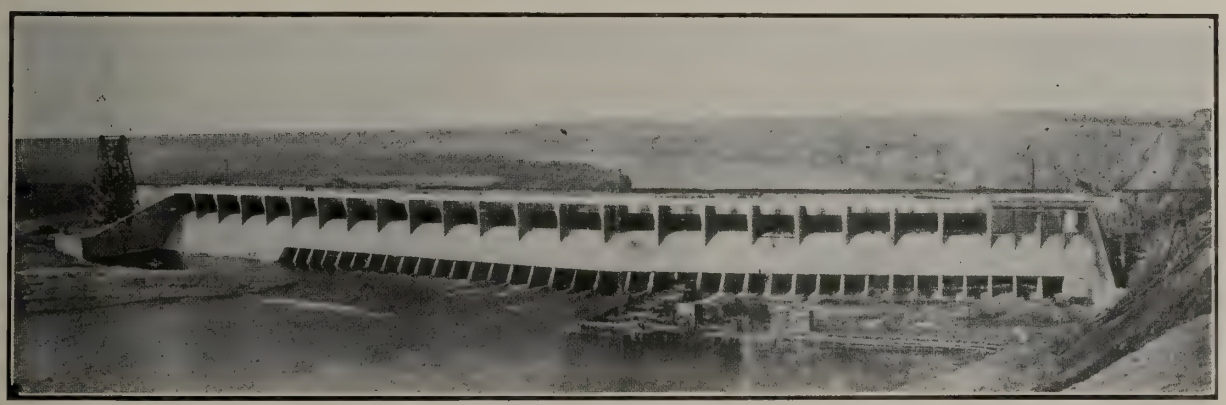
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Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Canadian Barker Co., Ltd., Sault Ste. Marie, Can.
Green Bay Barker Co., Green Bay, Wis.
Jenckes Mach. Co., Sherbrooke, Can.
Hamilton, Wm., Co., Peterboro, Can.
Waterous Engine Works, Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.

Beaters
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Holyoke Mach. Co., Holyoke, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Brantford, Can.

Beater Rolls
Bentley & Jackson, Bury, Eng.
DeCew, J. A., Canadian Express Bldg., Montreal, Can.
Marx, J. & Co., London, E.C., England.
Tippet Arthur P. & Co., Montreal, Can.

Belting
Dominion Belting Co., Hamilton, Can.
Reddaway, F. & Co., Montreal, Can.
Sadler & Haworth, Montreal, Can.

Bleaching Powders
Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Winn & Holland, Montreal, Can.
Klipstein, A. & Co., Ltd., Montreal, Can.

Boilers
Jenckes Machine Co., Sherbrooke, Can.
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Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier St., Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Camel Hair Belting
Reddaway, F. & Co., Montreal, Can.

Calendar Rolls
Dillon Machine Co., Lawrence, Mass.
Farrell Foundry & Mach. Co., Ansonia, Conn.

Chemicals, Colors, Etc.
Brunner, Mond & Co., Montreal, Can.
Gewerkschaft Sachtleben, Homberg, Niederrheim, Germany.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter St., Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Valley Iron Works, Appleton, Wis.

Chip Screens—
Carthage Machine Co., Carthage, N.Y.

Cranes
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Northern Crane Co., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.

Conveying Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Can.

Cutters
West End Engine Works, Edinburgh, Scotland.
Dillon Machine Co., Lawrence, Mass.
Chambers & Simpson, Toronto.

Cylinder Covers—
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Dandy Rolls—
Johnson & Sons, C. H., St. Henry, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining
Can. Boving Co., Toronto.
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Evaporators
Scott, Ernest & Co., Fall River, Mass.
Zaremba Co., Buffalo, N.Y.

Experimental Machinery—
Marshall, T. J. & Co., Ltd., London, Eng.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Ayers, Ltd., Lachute Mills, Que.
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Heimbach, Thos. Jos., Ltd., Duren, Germany.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

MILL SUPPLIES CONTINUED

Laying Machines
Chambers & Simpson, Toronto.
Collis & Sons, J., London, Eng.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Fischer, Julius, Nordhausen, H., Germany.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Scales
Mardon, Alfred H., London, E., England.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.

MILL SUPPLIES CONTINUED

Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines

Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste

Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines

Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que.
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C. & Co., Ltd., Craig St., Montreal, Que.

Kraft—

Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Rooth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, J. C. & Co., Ltd., Montreal, Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—

McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—

Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—

Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,

Deputy Minister.

Department of the Interior, Ottawa,
December 20th, 1912.

PAPER MILLS CONTINUED

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Corrugated Paper—
Lazier Paper Mills, Ltd., Belleville.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson & Co., Ltd., J. C., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., ... Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson & Co., J. C., Montreal, Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C. & Co., Ltd., 700 Craig St, Montreal, Que.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
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Laurentide Co., Ltd., Grand Mere, Que.
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McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

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Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

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Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
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Trent Valley Paper Mills, Glenmiller, Ont.

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St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
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Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
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Ford, Rowland, Port Neuf, Que.
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Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
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Moira Paper Mills, Belleville, Ont.
Montreal Paper Co., St. Bazile, Que.
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Riordan Pulp and Paper Co., Ltd., Montreal, Que.
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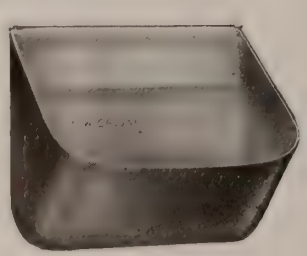
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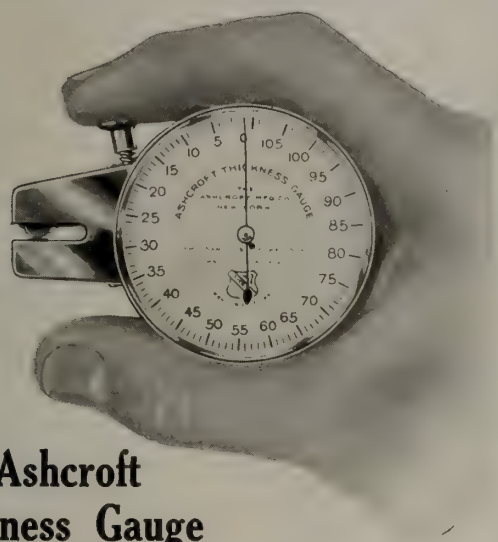
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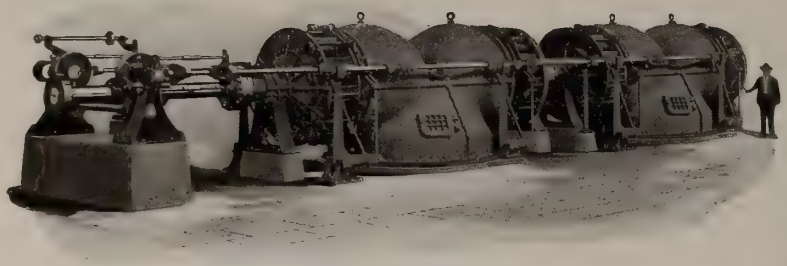
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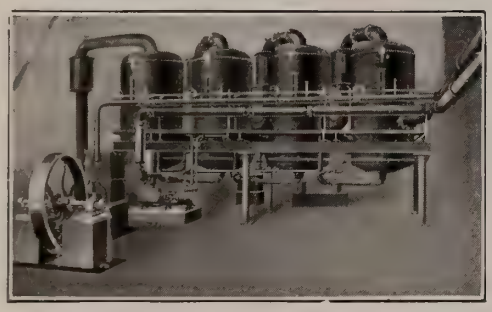
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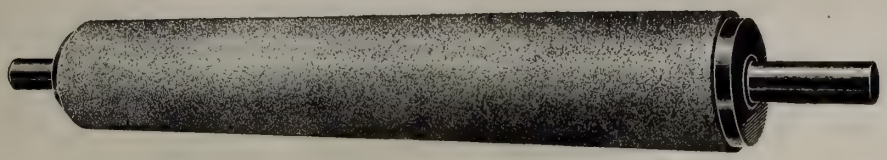
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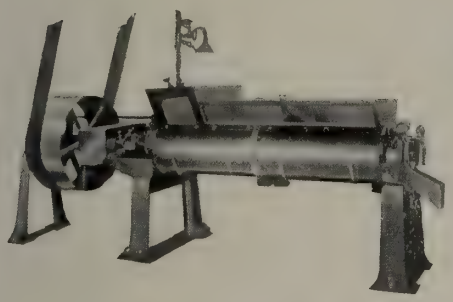
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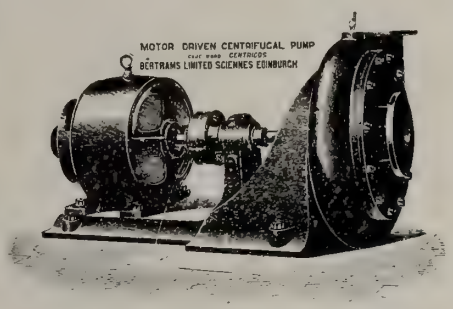
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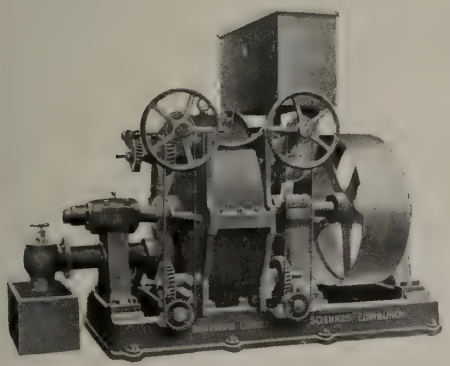


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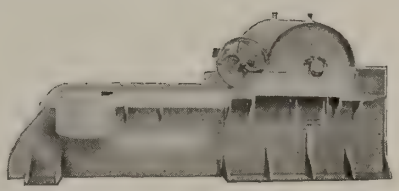
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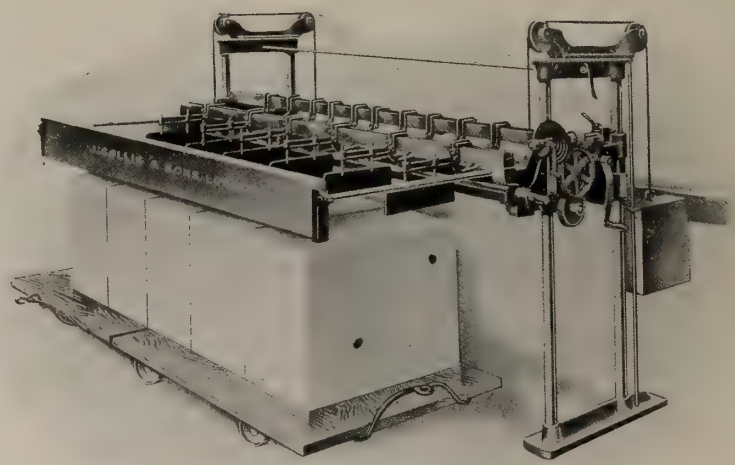
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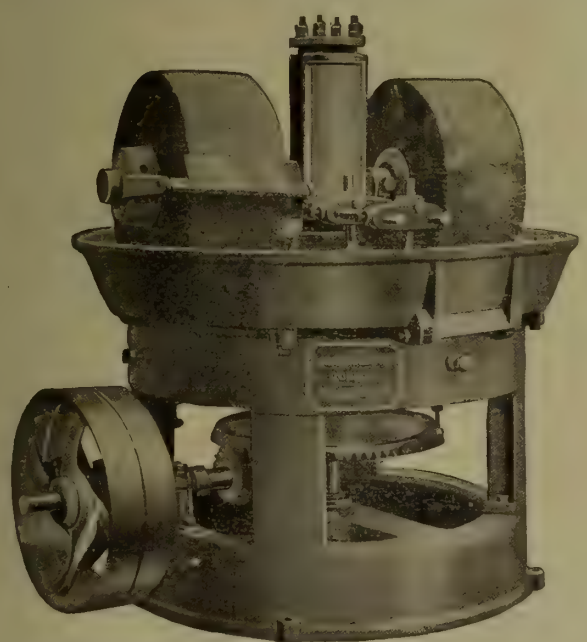
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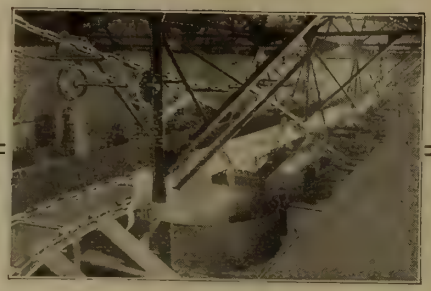
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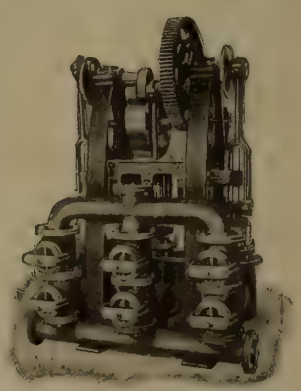
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VOL. XI. TORONTO, APRIL 1, 1913 No. 7

PULP AND PAPER MAGAZINE OF CANADA

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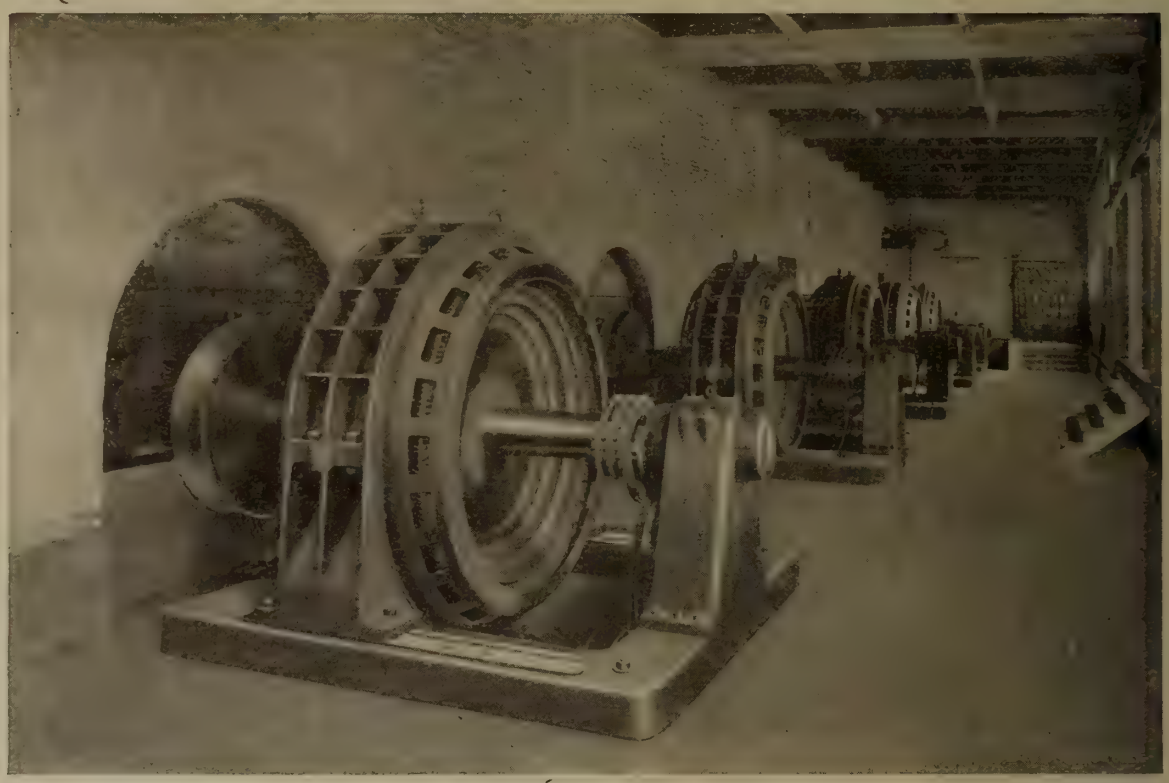
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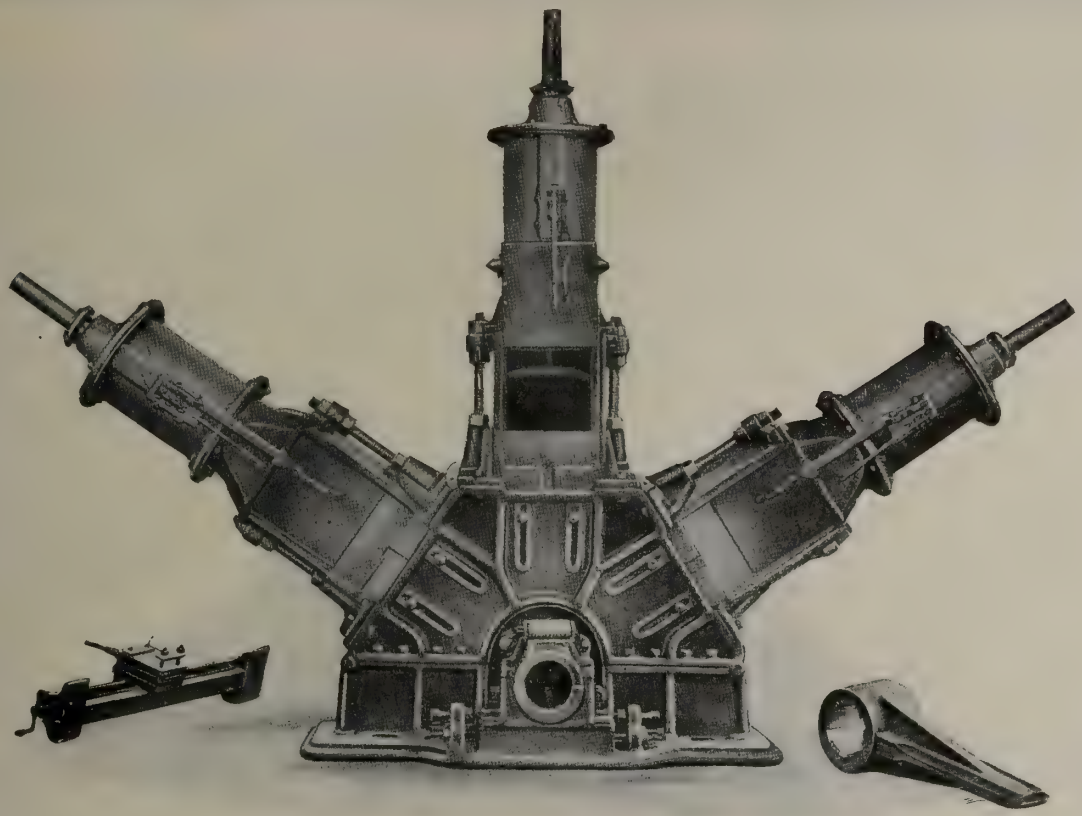
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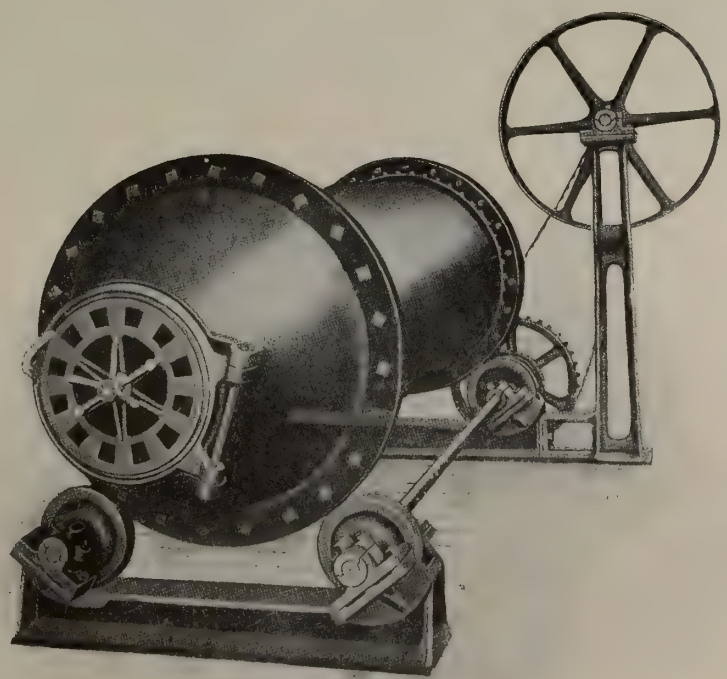
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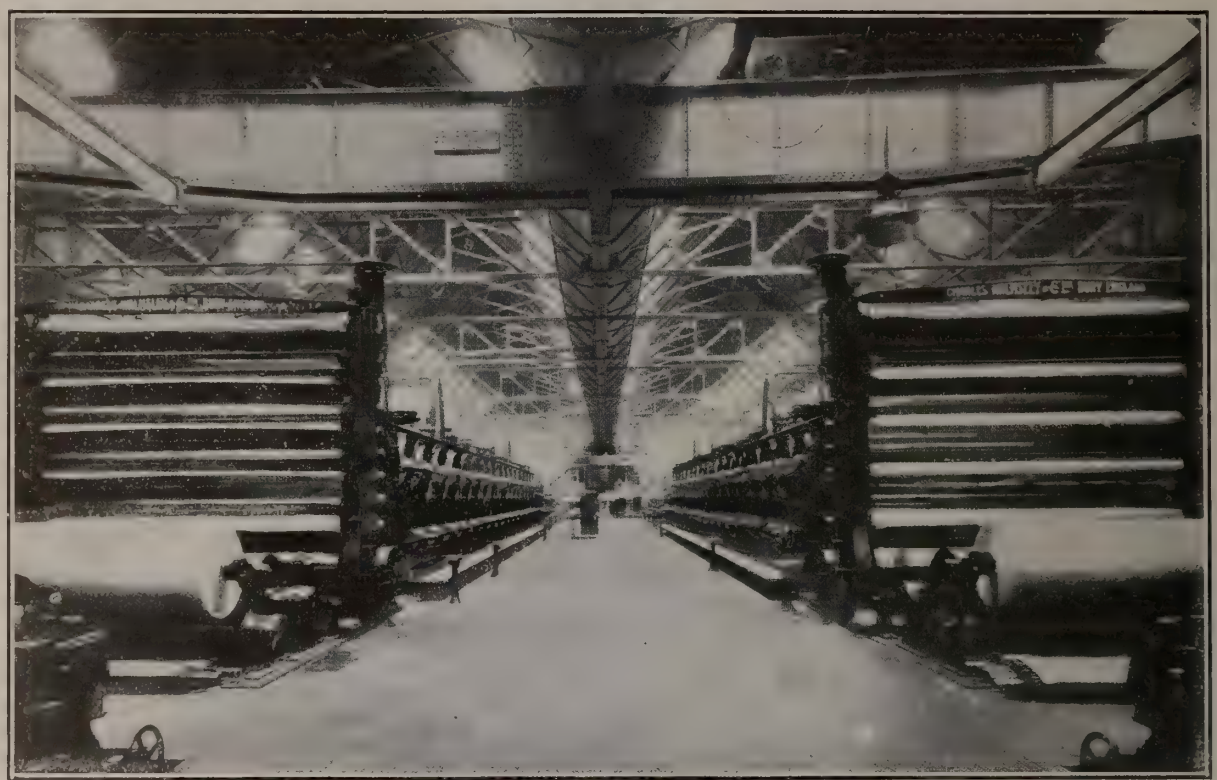
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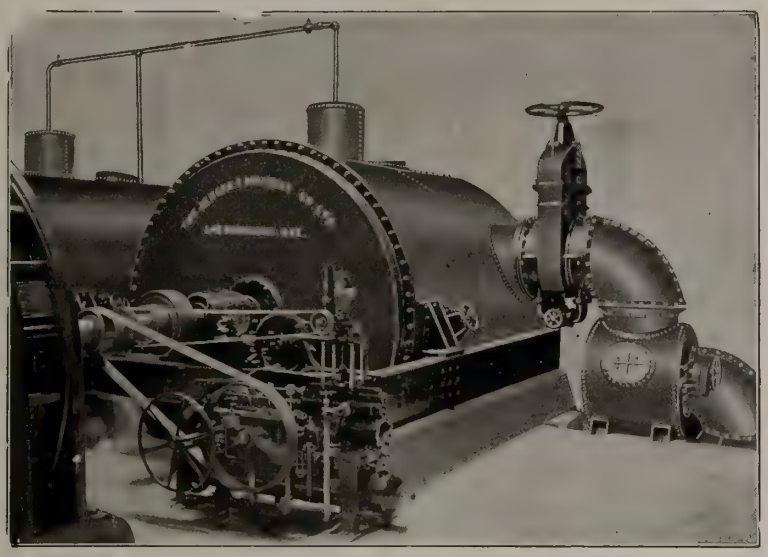
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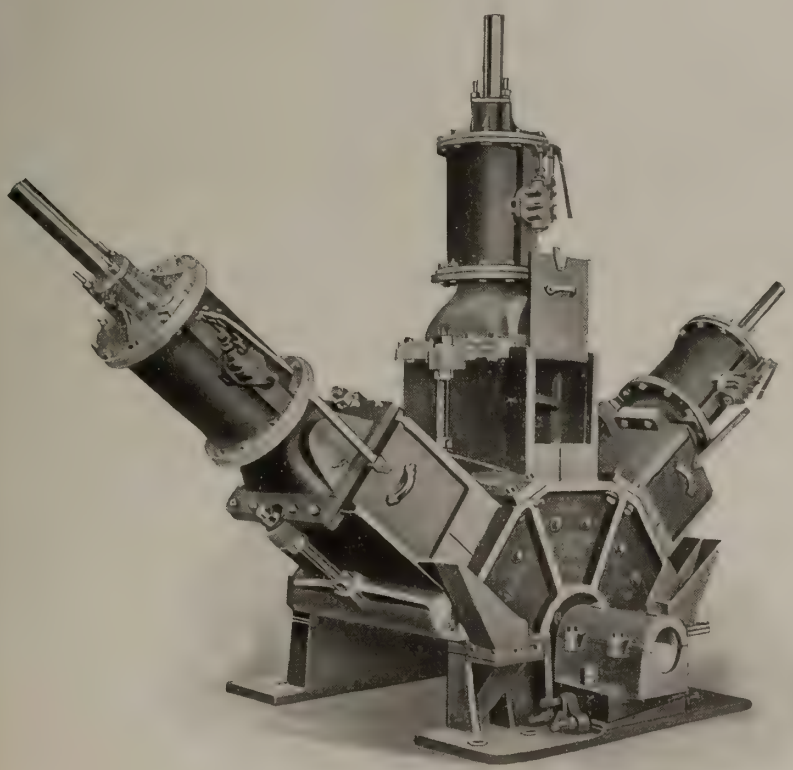
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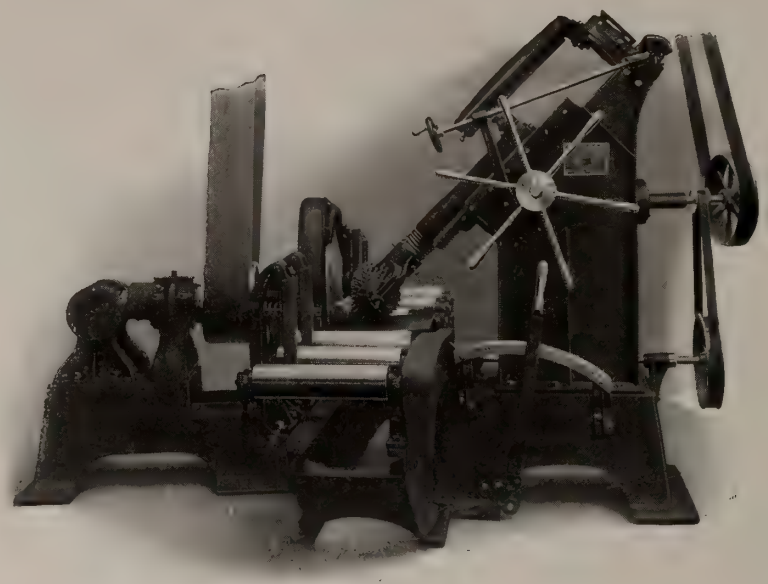
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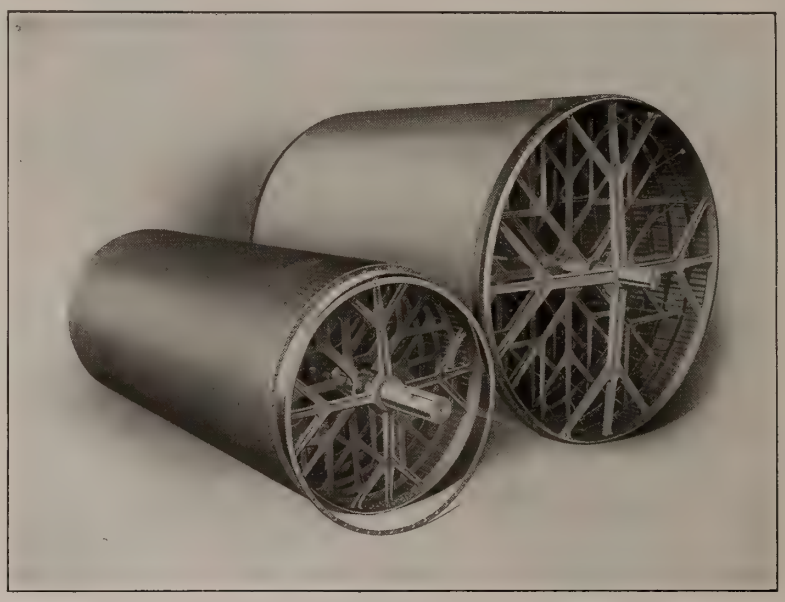
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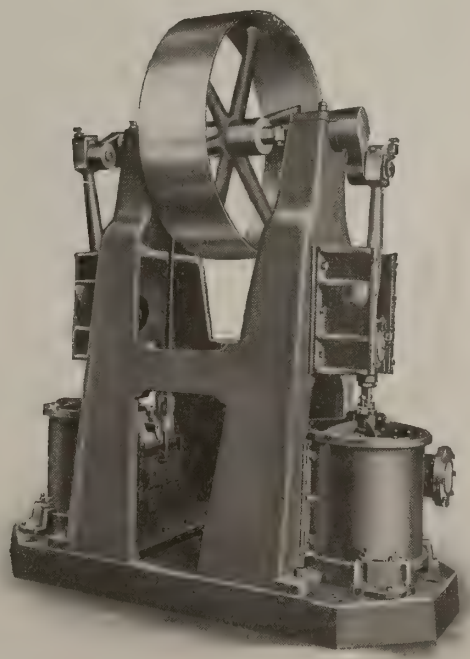
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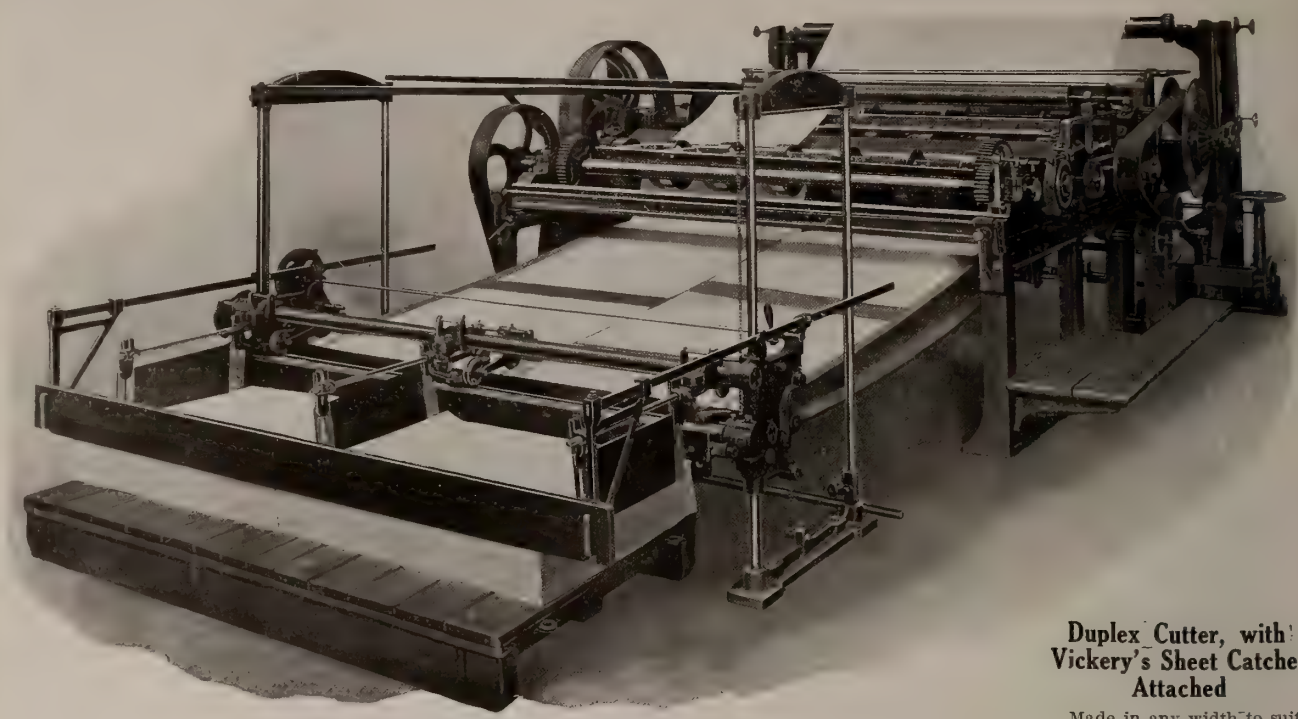
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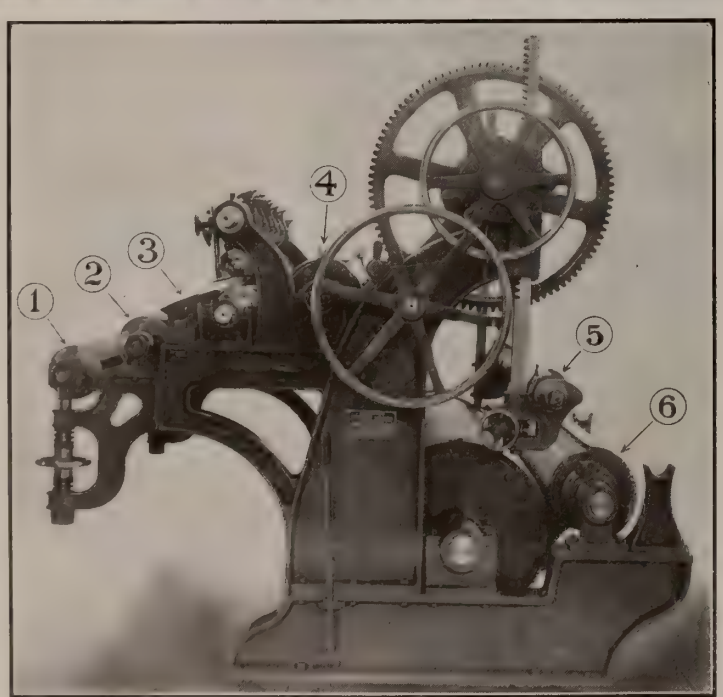


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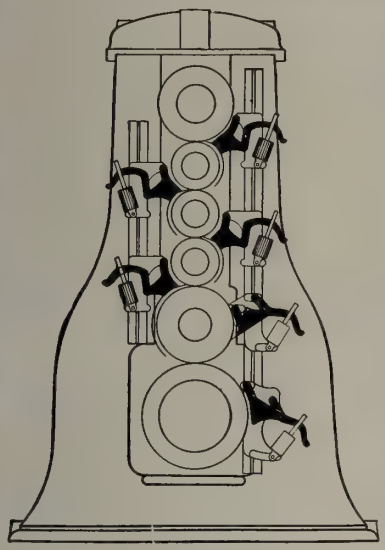
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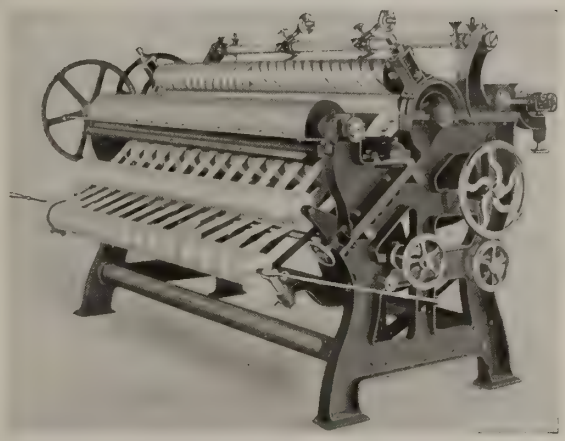
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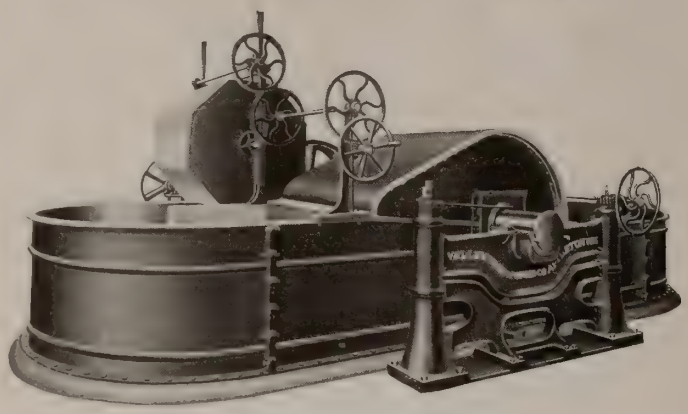
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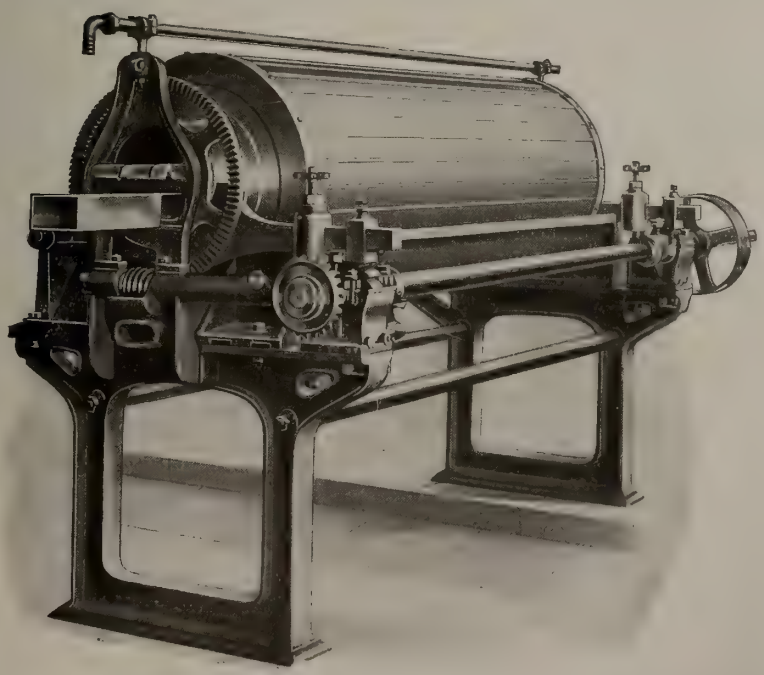
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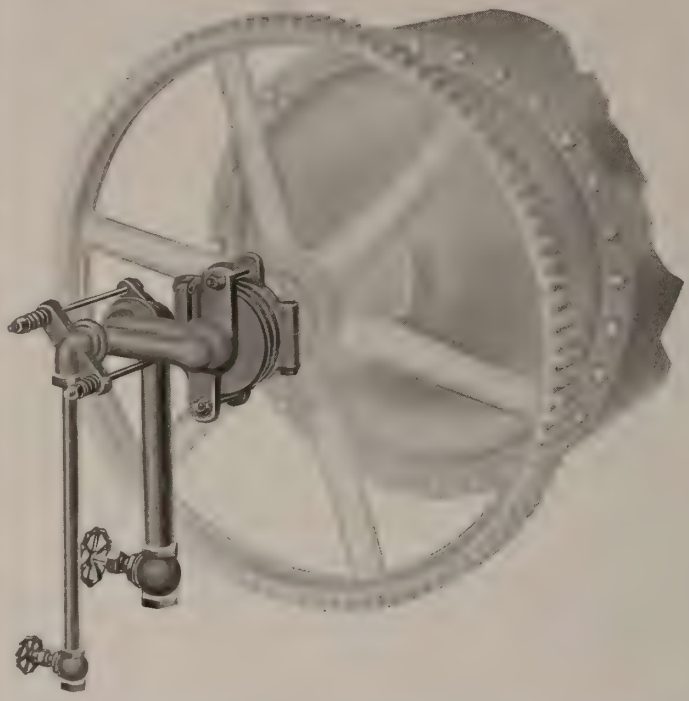
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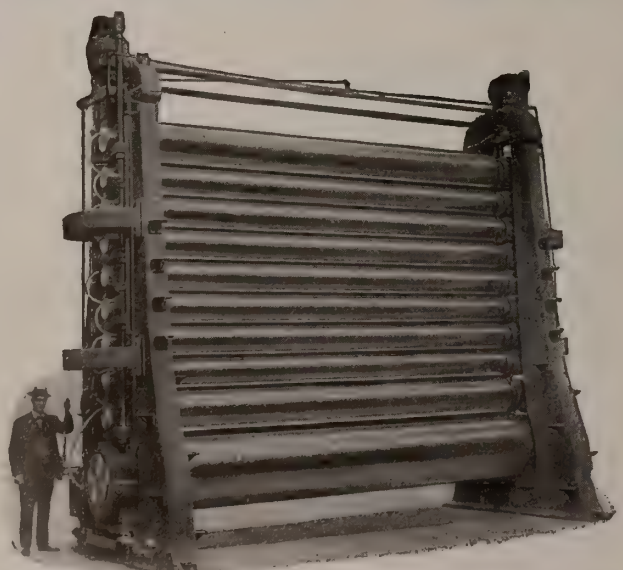
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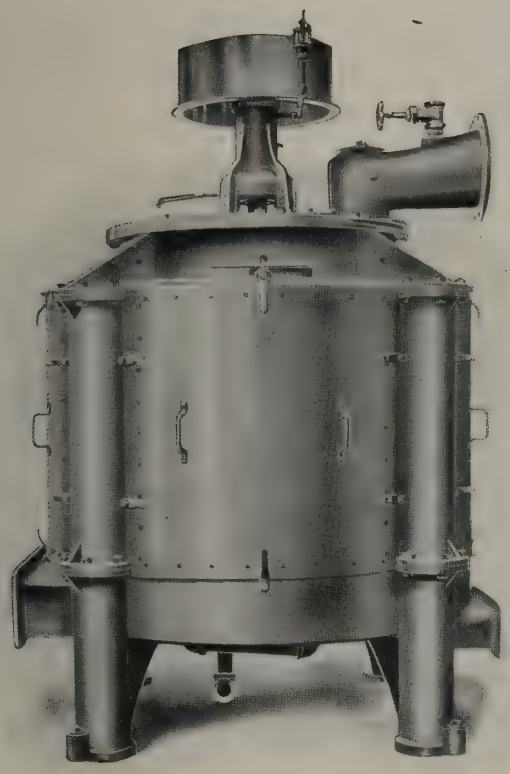
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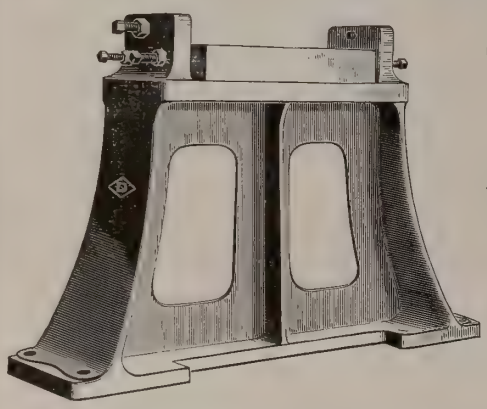
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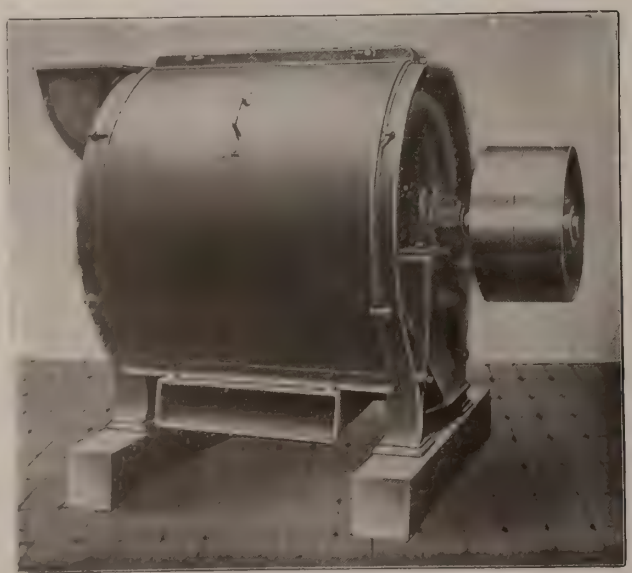
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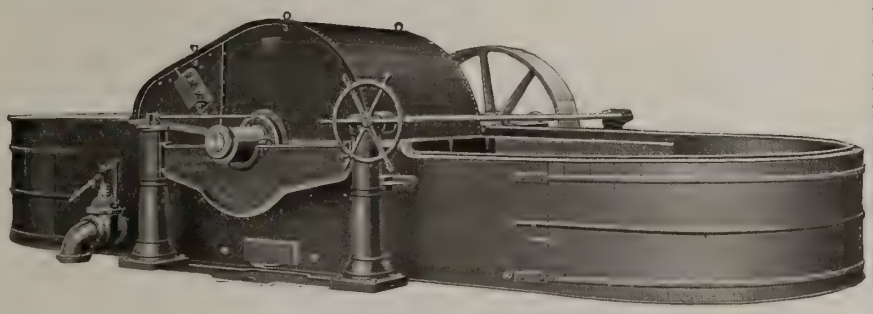
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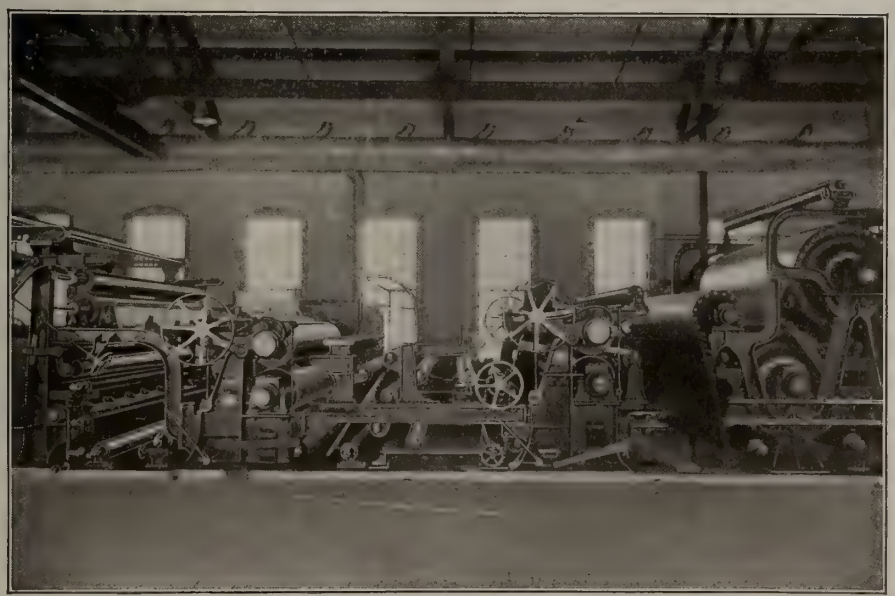
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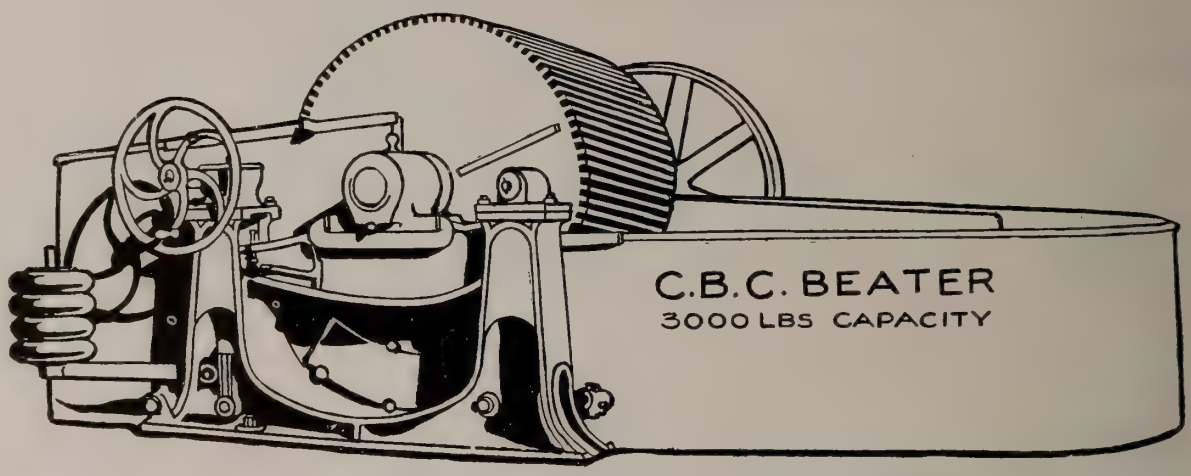
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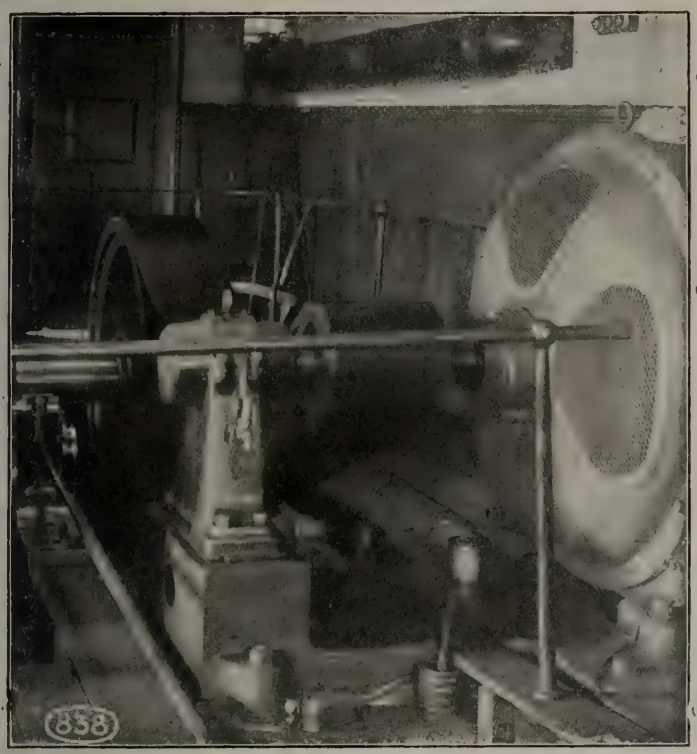
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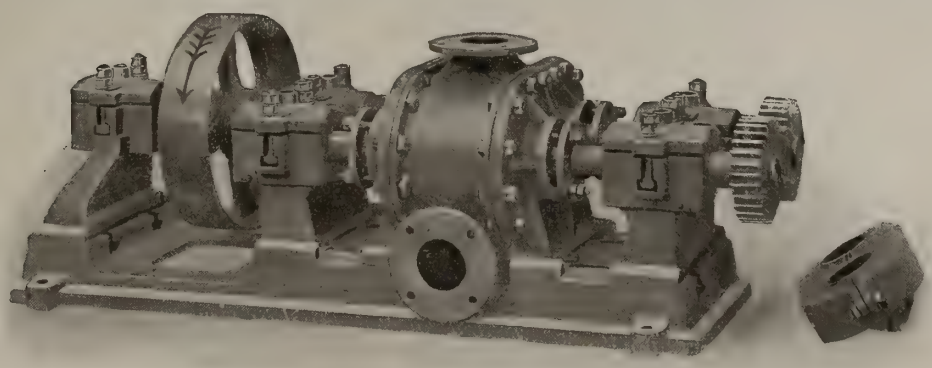
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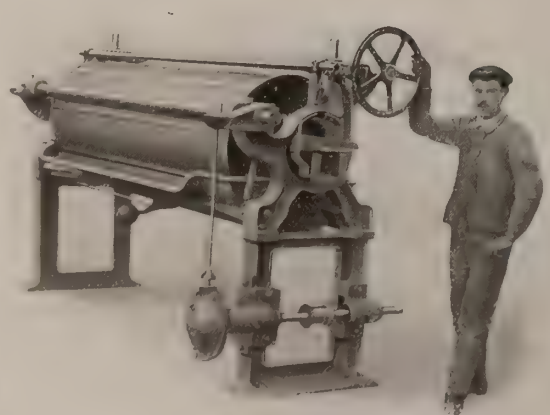
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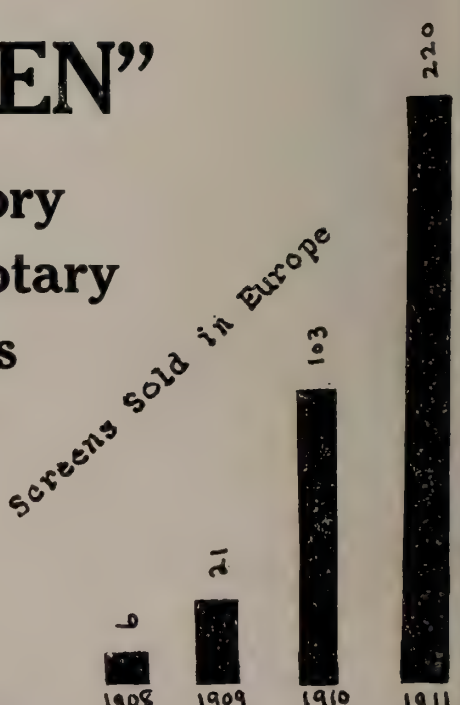


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VOL. XI. TORONTO, APRIL 1, 1913 No. 7

WHAT WILL IT BE?

There is much conjecture among the Canadian and American pulp and paper circles over the possibility of the report of the Ways and Means Committee. It has already leaked out that schedule "M," covering wood pulp, paper, etc., in its re-written form, places the duty on paper at a nominal figure and gives wood pulp free entry into the United States. This is but an additional ear mark that the news print industry is rapidly moving north and tariffs must adjust themselves to these new conditions.

Canadian pulp wood should be more carefully guarded, since the production in Canada, under such a schedule, will increase very rapidly and our resources will be taxed in the course of a few years. Free wood to our Southern competitors should be looked on as an absurdity by Canadians in general and tariff makers in particular.

The test case now before the American courts, in which Mr. Hastings took a car of Riordon sulphite through the port of Niagara Falls and protested that his firm, the Cliff Paper Company, should pay duty has been delayed by the Taft administration till the decision is now in the hands of the new government. It is expected that the contention of the government of free admission will be sustained. Spanish River, likewise, has a good case and under fair ruling should obtain free entry for paper.

Contractual restrictions providing for erection of mills cannot by any fair means be construed to be an export duty. On the whole the Canadian prospects are very bright for a larger outlet in the American paper market.

NEW BRUNSWICK FALLS IN LINE

As urged recently in editorial columns of the Pulp and Paper Magazine, the timber lease policy of New Brunswick has now been radically changed, although it is by no means even yet all that is to be desired. The new Act just passed the House, provided for two timber leases—pulp and paper, and saw-mill. The former runs for thirty years, renewable annually, and is subject to a further renewal of twenty years. This is a decided step in advance and will mark a rapid development in pulp and paper in that Province, where a number of very large schemes have only been waiting some action on the part of the Government.

Even these leases, however, are not as long as they should be for pulp and paper development. The large capital outlay required for mills, as well as the more scientific cutting which is customary for pulp wood, demands long term leases in perpetuity. Short term leases tend to wanton destruction, and a squandering of the forest resources of the country, where as long terms in self-interest operates along economic and conservation lines. Even as it is, however, we predict an immense development in pulp and paper in New Brunswick.

The vast forest resources of one of our richest provinces will now be open to the development of pulp and paper mills which has meant so much to the other provinces of Canada. The numerous waterpowers so long undeveloped will now add to the income of the province and the prosperity of the people.

THE NEW ASSOCIATION ORGANIZED

March nineteenth recorded a red letter day for the pulp and paper industry of this country when the Canadian Pulp and Paper Association was formally organized and launched, after long discussions and much thought. The enthusiasm and optimism of those



MR. W. R. GUNDY,
Vice-President Canadian Pulp and Paper Association.

heads of the industry present was most marked and striking. The objects and effects of such an organization were most carefully threshed out. This discussion after the few weeks of thought, which all had given the proposal, insures the Association of the unanimous support of the entire pulp and paper manufacturing industry.

That the new organization will be run on a sane and practical basis is evident, and every indication points to the fact that the support of the new movement throughout Canada will even surpass that which the American Pulp and Paper Association received.

To say there was no dissenting voice would be wrong and would have been a bad omen for the success of the new venture, but when it was clearly understood and emphatically established that the new body proposes to leave entirely alone, all questions of price fixing, division of territory, or regulation of production, it was heartily endorsed by all present.

Most firms immediately signed the roll, the others only waiting to have resolution put through their firm directorate.

Things didn't start with a hurrah and a shout, but were the result of a keen conviction and the unbounded belief in the possibilities of the Canadian industry.

The following firms were represented:
Riordon Pulp & Paper Co., Ltd.
J. R. Booth.
Dominion Paper Co.
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Joseph Ford & Co.
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Brompton Pulp and Paper Co. Ltd.
Wayagamack Pulp & Paper Co.
Abitibi Pulp & Paper Co., Ltd.
St. Lawrence Paper Mills Co., Ltd.
Kinleith Paper Co., Ltd.
Northumberland Paper & Electric Co.
Rolland Paper Co.
Jacques Cartier Pulp & Paper Co.
Barber Paper & Coating Mills.
Howard Smith Paper Mills.
Belgo Canadian Pulp & Paper Co.

Carl Riordon, of the Riordon Pulp & Paper Co., was unanimously elected President, and W. P. Gundy, of



GEORGE H. MILLEN,
Chairman of Section on Miscellaneous Papers.

the Kinleith Paper Co., Vice-President. A. G. McIntyre, Editor of Pulp and Paper Magazine, Honorary Secretary-Treasurer.

Arthur C. Hastings, President of the American Pulp and Paper Association, spoke on the numerous benefits

Our First President



CARL RIORDON

President, Canadian Pulp and Paper Association.
Vice-President and Managing Director, Riordon Pulp and Paper Co., Ltd.

that organization had been to the American industry. He was enthusiastically received and heartily welcomed by the Association.

R. H. Campbell, the efficient director of the Forestry for Canada, spoke on the Canadian Forestry Association, and on the policy of Dominion Government in connection with the establishing of forest products' laboratories. On taking his seat the Association unanimously passed the following resolution:

The Canadian Pulp and Paper Association wishes to put itself on record as heartily in sympathy with the proposed Forest Products Laboratories of the Dominion Government, and this Association further pledges its united and enthusiastic support of the Government in this new departure."

A new and live Canadian Pulp and Paper Association has been launched. The President is a live wire. Everyone to his support.

MR. HASTING'S SPEECH

Mr. Arthur C. Hastings, President of the American Pulp and Paper Association, addressed the Association as follows:



President American Pulp and Paper Association.

I take it that your Association contemplates a membership composed of the manufacturers of paper and pulp only. The practical benefits to the Canadian manufacturers should lead to the support of your Association by every manufacturer of paper and pulp, and it should be the duty of your officers to see that they are members; in some instances, I imagine, it could be accomplished through a personal appeal to the manufacturers. A Permanent Secretary should be elected whose duty it should be to see that all manufacturers become members, and that the information gathered be given out to the members, and for their benefit. Co-operation through knowledge is necessary in this age of competition. Confidence in each other by the manufacturers will be the key note to your success.

The Bureau which you will establish should have accurate knowledge as to the production and demand for the particular grades of paper manufactures in Canada, and the confidence that must be had in the officers of your Association will lead to all the information that is necessary, and the manufacturers will feel entirely satisfied that the information is to be used for their general good only, and that the individual manufacturer's business is not for publication or for the use of his competitor. These facts as to manufacturing conditions and demand as developed by statistics must mean a more intelligent placing of their product.

The law of supply and demand must prevail in the paper and pulp business as it does in every other industry. Legislation can be intelligently guided through a knowledge of conditions which will be brought out through your Statistical Bureau. There is no question but that the stocks of paper in the country, and the demand both abroad and home must be as important in the successful marketing of a product as the informa-

tion that each individual mill gathers as to the operation of its own plant.

With the large production of paper and pulp in Canada in excess of her home demand it is desirable that information as to foreign markets be available. Our Association will be glad to exchange information with you as to supply and demand in the United States, realizing that this is a desirable market for the Canadian surplus, and believing that it is much better for



I. H. WELDON,
Chairman of Section on Book Papers and Member of Organization Committee.

the American manufacturers to know what to expect in the way of importations than to guess at it. The information gathered by your Association will be of great benefit to the American manufacturer in the conduct and sale of his product, and if that is so, the more statistics that can be compiled, the better for both countries.

As your Association continues the more information will be readily given by the members. The process of actual conditions effecting all mills may be some little time in perfecting, but it will come as facts are developed.

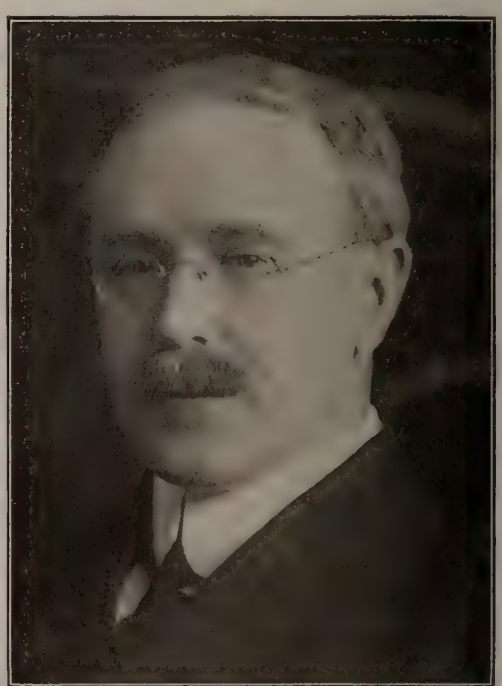
Our Association deals only with supply and demand and matters of interest to the manufacturers aside from the question of price, which we have carefully avoided. Gentlemen's agreements have never held during periods of great over production or low demand. Intelligent co-operation through knowledge of facts must lead to benefits through individual consideration of conditions confronting the manufacturers, and it is upon that basis that we have endeavored to interest the American manufacturer, and, I think, quite successfully.

This Association will be very glad to co-operate with you and be of any assistance we can in the preliminary work you are obliged to take up in the way of blanks, etc., and the interchange of statistics will be of mutual advantage I believe.

OUR NEW PRESIDENT

Mr. Carl Riordon, the new President of the Canadian Pulp and Paper Association, is one of the best-known paper men in Canada. In a measure, Mr. Riordon was born in the pulp and paper business, and has so thoroughly imbibed paper lore, that he is looked upon to-day as one of the greatest paper authorities on the continent. Mr. Riordon was born in 1876 at St. Catharines, Ontario, his father being Mr. Charles Riordon, President of the Riordon Paper Company. The son was educated at Upper Canada College, Ridley College and at Toronto University, graduating from the latter institution in 1896. Immediately on graduation he entered the Merritton mill of his father's company, and acquired a knowledge of the sulphite department. He worked through the various departments of the mill, and then went to the Hawkesbury mill in charge of repairs, later becoming superintendent. In 1902 he returned to the Merritton mill as manager, and in 1906 was made general manager of the entire business of the Riordon paper mills. In 1910 his company absorbed the G. H. Perley Company, and became known as the Riordon Pulp and Paper Company with headquarters in Montreal.

Mr. Carl Riordon is Vice-President and Managing Director of the Riordon Pulp and Paper Company, a



T. J. STEVENSON,
Chairman of Section on Chemical Pulp.

director of the Mail and Empire, of Toronto, and a director of the Niagara Falls Suspension Bridge Co. He is a member of the following clubs, the Mount Royal, the St. James, the Engineers and the Canada Clubs of Montreal, and of the Toronto Club, Toronto, the Alpha Delta Phi Fraternity, and the Britsh Empire Club of London, England. Mr. Riordon is interested in military affair being at one time a captain in the 9th

St. Catharines Regiment. Canoeing is his chief recreation. Mr. Riordon was married in June, 1900, to Miss Patterson, of Port Hope, and has a family of four.

The new Association is to be complimented on the happy choice of its first President.

MR. CAMPBELL'S SPEECH

Mr. R. H. Campbell, Director of Forestry, said:—

I must thank the Pulp and Paper Association for their very kind invitation to attend the luncheon and to address the meeting of the Association. As an officer of the Government I feel that the Government has a very



R. H. CAMPBELL,
Dominion Director of Forestry.

direct interest in the work of such an association as yours. The great natural resources of Canada are the source of the wealth and prosperity of the Dominion, and among these resources none is more important than the forests. The forest products and the manufactures dependent thereon produce wealth and support industry that means a very large amount in the trade of the country and has very direct influence on the public revenues. In fact no other of the natural resources has contributed so much directly to the support of the administration of government in Canada as the revenue statements of the provinces will easily demonstrate. There is therefore reason that the Government should take an interest in anything that will promote the prosperity of such an important industry as is represented by this association.

Your President has mentioned that I will speak for the Canadian Forestry Association, and, although I had not intended to say anything specially in regard to the association, I will say a few words, since the subject has been mentioned. The association was formed about twelve or thirteen years ago with the object of educating the public on the necessity for protecting and preserving our forest wealth. Two of the main things that the association advocated are: First, the protection of the forests from fire by providing a fire patrol of efficient men, well organized and well equipped; and, second the inspection of the public lands and the separation of the agricultural from the non-agricultural lands, the latter being included in reservations and kept permanently for the production of timber. These two objects the association has kept before the public by all the means of education which are available. It has also made representations to the Government for the improvement of fire legislation, which has done considerable towards perfecting the statutory authority for the protection of the forests. No matter how efficient the legislation is, however, it needs to be backed up by a strong public opinion, and the association, which is not a Government institution, but a voluntary institution to whose membership all the members of the Pulp and Paper Association will be welcome, is doing a great deal to educate the public and form such a necessary background of public support.

In the development of the utilization of forest products there are questions which arise which are legitimately a subject for Governmental consideration. In connection with the pulp and paper industry there are questions which arise, such as the suitability of different woods for manufacture of pulp and paper, the extension of the use of materials in this respect, the supply and composition of materials used in the manufacture, the utilization of materials now going to waste, and many other things that make for efficiency and economy in the use of the natural products and for the production of the greatest amount of wealth therefrom.

The Government may legitimately step in and assist the industry in the investigation of such questions. Some of them can, of course, be investigated by individual firms but even after the indivudal has done his part there will probably be something that the Government will require to do, and many manufacturers cannot spare the time or money for experiments, which in many cases, may not in the end produce practical results.



A. G. McINTYRE,
Honorary Secretary-Treasurer.

The Minister of the Interior has taken a good deal of interest in the proposal to establish a Forest Products Laboratory in connection with his department, and has provided in the estimates submitted to Parliament a proposal for a small appropriation to make a start in such work.

We would like to feel that in undertaking the establishment of such a laboratory we have the sympathy and co-operation of the Pulp and Paper Association. If we have their support we feel that we can go with more confidence to the Government of the country and affirm that the proposal is a practical and a useful one. The co-operation of this association would be further useful in helping to keep the line of investigations in the proper channel. Such research work may easily become too academic if it is not closely in touch with actual business, and the co-operation of this association will assist materially in keeping our investigations on right lines and making them more full benefical to the industry.

SLUICE OPERATION IN CONNECTION WITH WOOD HANDLING EQUIPMENT

The author of this article is one of our foremost Canadian paper mill engineers, having designed one of the best working systems we have. His article is timely and practical.—*Ed.*

One of the many problems that confronts the newspaper manufacturer of to-day and also the manufacturer of sulphite and ground wood pulp, is that of handling his pulpwood after leaving the saws that have cut the logs into lengths suitable for use in wood preparing machinery installed.

The modern newspaper manufacturing plant is located primarily, with reference to its water power, and secondarily, water power conditions being equal, to its nearness to the source of wood supply. The tendency is if possible to locate within the areas from which the pulpwood is cut so that it may be driven directly to the mill, thus avoiding the costly transportation and rehandling charges with which the older mills now located far from their supply must contend.

Different species of wood are being experimented with continually in the attempt to discover one that, while suitable for the manufacture of paper, is in small demand otherwise, and therefore cheap, but at the present time spruce forms the greatest percentage of the wood used, together with hemlock and balsam, although only certain percentages of the latter can be used as its texture is suitable only for an inferior grade of paper.

As the supply of the conifers above mentioned lies in the regions where the winter season makes it impossible to handle the wood from the river through from four to six months out of the year, sufficient wood must be cut and conveyed to the storage piles through the cutting season to keep the mill in operation through the frozen months, and must be in excess of the regular daily quantities used in the paper. Taking for example a 200-ton mill using approximately in operation 300 cords per 24 hours, this problem of handling such an amount to the operation department and also to storage becomes highly important. A mill located where supply must come from storage for six months out of the year must handle in round numbers 46,000 cords to storage besides a like amount during the summer months to operation, and during the months when using from storage the supply must be conveyed steadily to the mill as delays and breakdowns in the convey-

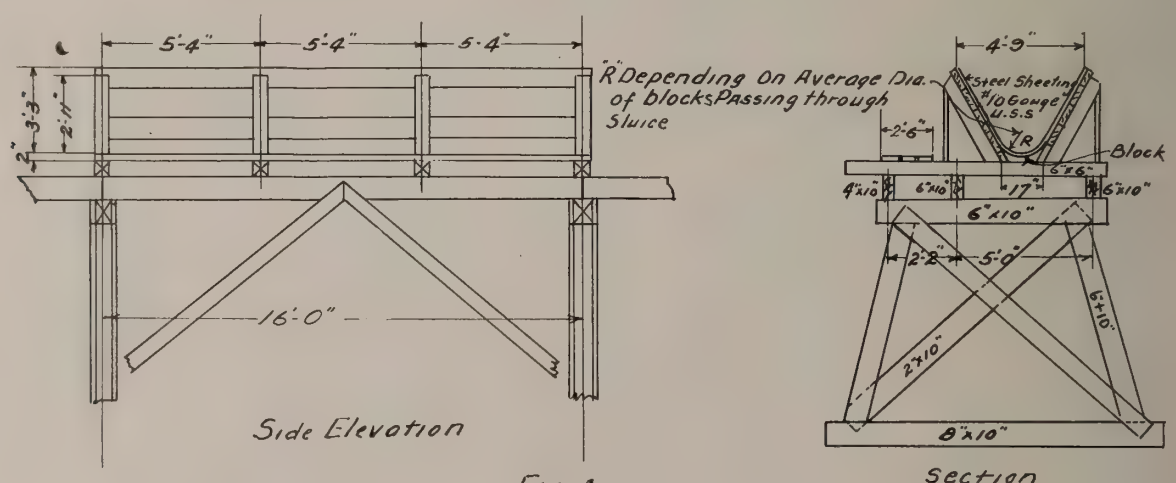


Fig 1

DETAILS OF SLUICE FOR PULP WOOD

ing equipment make necessary costly handling by hand or even perhaps an entire shutdown of the plant may result due to an insufficient supply of wood.

All mills have different conditions to contend with as regards their wood handling, due to design and location, only two cases will be described in this article, namely, the mill taking its log supply directly to the wood room, and the logs after being cut up passing through room to storage areas; and secondly, the mill taking its supply at some distant point and having its storage areas between the supply point and the wood room.

In the former case, the logs are conveyed directly from the forebay or river to the cutoff saws located in the wood room and from the saws the blocks go directly to the barkers and chippers. Up to this point no complications arise, and if operation could be thus for the entire year, the matter would be simple, but as storage must be prepared for, an area adjacent to woodroom must be provided, and the slasher equipment be of sufficient capacity to handle practically double the quantity that is needed to operate.

The latter case arises when conditions make it impossible to convey directly to the wood room, the cutoff saws being located at the most convenient point at the water's edge and the blocks conveyed therefrom, allowing the storage quantities to go to storage pile and the balance to go to wood room for operation.

Referring to the 200-ton mill before mentioned, a slasher equipment should be installed capable of cutting as a minimum 750 cords in 10 hours, it being understood that the barker room equipment is capable of handling sufficient wood in ten hours for the total 24-hour output of finished product. This will allow for the 600 cords per day with two hours for shut downs and repairs, and also means that nearly 300 lineal feet of blocks must be conveyed per minute, logs averaging 9-inches in diameter. This requires large conveying capacity, as the blocks must be conveyed quickly, otherwise there will be repeated jams and time lost.

Owing to the conditions it may be compulsory to use cable conveyors only, but if the elevations permit and a sluice conveyor can be utilized, a great amount of labor can be saved, also maintenance charges, as a sluice will operate continuously with no attention, the only operation casts being the power provided for elevating the water used in floating the wood.

A sluice can be used during the entire year as the velocity of the water will prevent freezing, and the only precautionary measures needed will be a heated enclosure about the pumping equipment in case of shut downs. One of the advantages of a sluice conveyor over cable, is that it can be used for storage. The trough can be constructed of sufficient size to hold a large amount of wood and a sluice of 1,500 feet or over will hold double the quantity that can be accom-

A. Temporary Gate To Be Moved With Stacker
B. Portable Conveyor Used To Convey From Storage Pile To Cable Conveyor
C. Crane With Orange Peel Bucket. From Pile To Portable Conveyor
D. Sluice From Slasher To Wood Room Block Tank
E. Cable Conveyor Used To Convey From Portable Conveyor To Wood Room
F. Stacker To Convey Wood From Sluice To Storage Pile
G. Slasher And Log Haul Up
H. Wood Room Block Tank
I. Barkers.

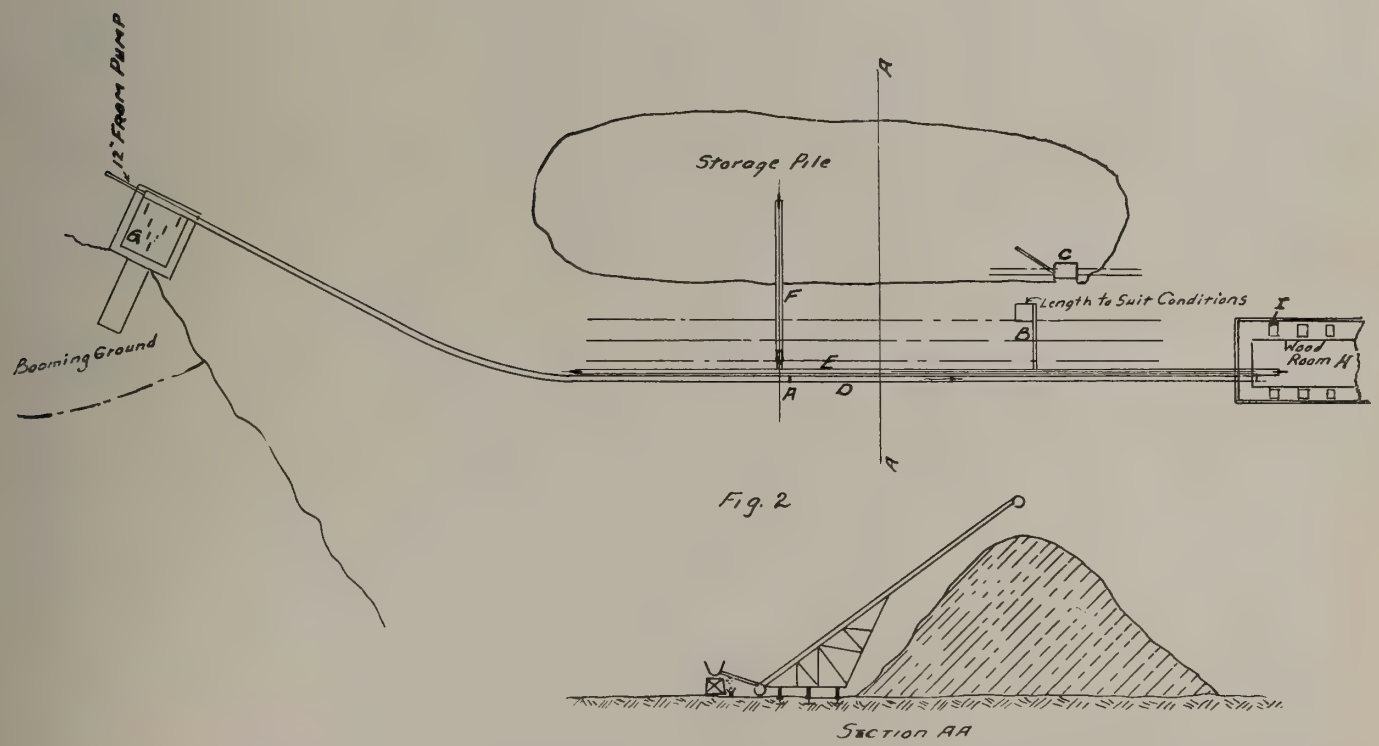


Fig. 2

Section AA

odated in a wood room block tank. The travel of the wood can be regulated by a gate and the water overflowing can be piped to any convenient sewer or water way. In a cable conveyor the travel must be constant and the conveyor shut down whenever blocked at its delivery end.

Sluices may be designed with varying grades and cross sections and each do its work satisfactorily. The minimum allowable grade should be 6 inches fall per 100 feet, and this fall is not quite sufficient to keep the blocks from jamming, although one sluice with which the writer is familiar is operating through a length of 1,800 feet at this pitch, and very little trouble is experienced in keeping the blocks moving. Advantages of the low velocity of flow are apparent when the gate is shut and the sluice used for storage there being no jamming and crowding which is the case with high velocity.

When conditions permit a grade of between 18 inches and 24 inches per 100 feet, should be used. The flow will then be even and the velocity not too great, when stopped by gates or other obstructions.

Curves of a radius as low as 50 feet and even lower may be used, and the travel not impeded in the slightest, which is another great advantage over the cable conveyor, which must travel in a straight line between any two points. The construction charges are greater where curves are introduced, but only for this reason should they be avoided.

The sluice details, namely Fig. 1 accompanying this article have been followed in the construction of a sluice 2,400 feet in length, now operating in connection with the wood handling equipment of one of the large Canadian newspaper mills, and is giving perfect satisfaction, the cost of upkeep is practically nothing, and it is in operation throughout the entire year. During the months when the slasher is running, wood for operation is conveyed from the slasher direct to the wood room block tank, and that for storage being delivered to a stacker which conveys it to a pile wherever wanted. Cable conveyors were originally used, but could not handle the blocks with sufficient speed, and the slasher was being continually shut down to allow the conveyors to catch up. After the sluice was started up the slasher could be run at its maximum speed, which is about 80 cords per hour, and the wood blocks floated away long before those from the following log were ready to strike the sluice. The saving in operating costs at this one point have been great.

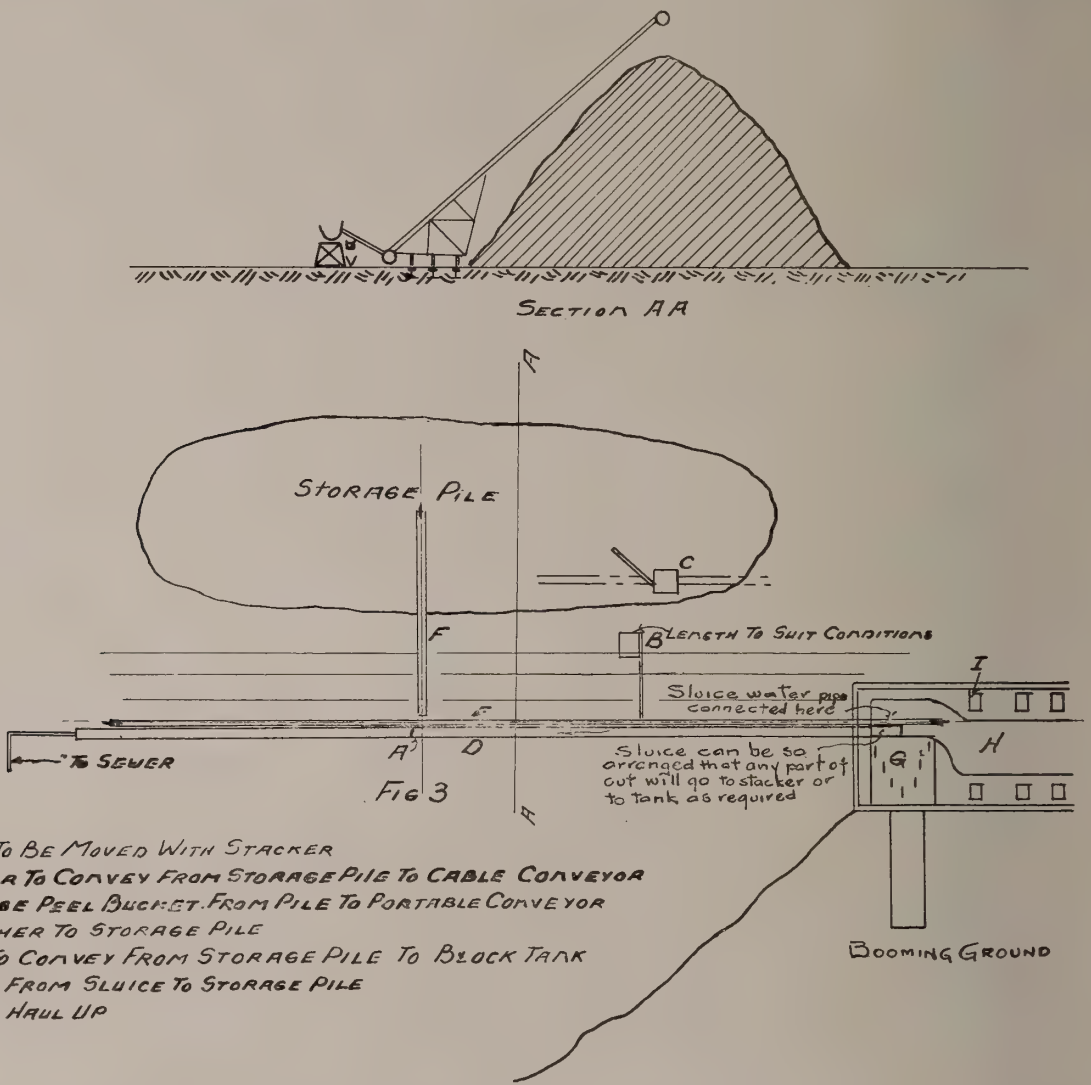


Fig 3

Fig. 1 shows typical details of a pulpwood sluice. The radius of the bottom curve should depend upon the average diameter of the blocks to be conveyed. The plate should be curved so that the larger blocks will rest in the sluice bottom allowing no space for the water to get through underneath. Thus any time the sluice drops due to any cause, the blocks will fill the section and must move on immediately, being

forced by the water damming up behind them, making a jam almost impossible.

The sluice should be lined with steel plates of about No. 10 U. S. S. gauge rolled to the dimension planned. This will make the construction charges much higher but in a few years' operation the lined sluice will be much cheaper than the unlined as this latter must be repaired frequently owing to the wearing effect of the blocks in travel, and also there is a great amount of leakage as the sluice made from plank alone, cannot be made to withstand the jars and remain tight. The sheets can be punched at the edges with holes of sufficient size to allow 4-inch spikes to be used and the plates are then spiked to the wooden supports and the nails clinched on the back side, the plates of course overlapping at the ends in the direction of the flow. The joints should be filled with white lead before spiking, and if this work is carefully done a perfectly tight sluice will be assured, and one that will require no attention for a long time to come,

Fig 2 shows a typical layout in which a sluice is used with a cable conveyor for returning the storage wood to the wood room. The sluice on the storage pile side is cut down at various intervals and a gate located so that when closed and the water backed up, the blocks will float through the cut down section and pass down a chute to be deposited directly at the receiving end of the stacker. The bottom of the chute at its upper end is composed of sections of rack bars through which the water runs to a sewer or other water way that takes it away. As soon as the wood room supply is exhausted, those in charge of the stacker are advised by bell or other automatic signal, the gate is raised and the blocks float through to the wood room block tank which is again filled. With this method the stacker must be of sufficient capacity to handle the entire output of the slasher through the periods in which it is operating, as the wood must all go either to the slasher or to the woodroom.

In returning the blocks to the wood room from the storage during the winter months, it has been found that a standard locomotive crane equipped with a large size orange peel bucket will take the place of twenty laborers. The crane picks up a bucket full of blocks and deposits them upon a sloping platform built out from the side of the conveyor, and the blocks upon being deposited roll down the slope and drop gently into the conveyor. One crane when working under average conditions, will supply sufficient wood to keep a 100-ton newspaper mill in steady operation.

Fig. 3 shows a typical layout with the same equipment for a mill taking its log supply directly into the wood room, the conditions of supply and storage being the same as for layout as shown in Fig. 2.

As the water in the wood room block tank should be heated during the winter months, it will be necessary to draw off the sluice water before reaching the tank, which can easily be done by constructing a slat conveyor of but few feet in length, to run parallel to the sluice, the blocks being deposited from the sluice to the conveyor and the water drawn off at this point. This will allow the tank supply to be heated and to be circulated by means of a pump as the blocks are deposited in the tank free from the accompanying water.

Mr. M. C. J. Billingham, formerly Canadian manager for Dan J. Albertson, paper mill engineer, has returned to the head office, Kalamazoo, as manager there.

UNITED STATES CUSTOMS.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., March 29, 1913.

The Customs Court will not decide the question of the right of European nations to send wood pulp and paper into the United States free of duty until it has considered the validity of section 2, the only operative clause of the Canadian Reciprocity Agreement, under which Canada is given free entry of wood pulp and paper, provided no export restrictions are imposed. Under the "Most Favored Nation" clause of the treaties with this country, Europe claims the same free entry privileges granted to Canada.

The Cliff Paper Company, in a test shipment of wood pulp imported at Buffalo from Canada, raised the question of the validity of section 2, contending Congress intended that no part of the reciprocity act should take effect until Canada adopted all of the reciprocal legislation provided by the agreement. As the treaty failed of ratification by the Dominion, is is contended that no portion of it is now in operation.

When the collector of customs admitted the company's test shipment, free of duty, a protest asking that duty be assessed, was made to the Board of General Appraisers. The appraisers upheld the collector, and the Customs Court is now asked to reverse that decision.

The Government filed briefs to sustain the decision of the board, and maintained that the purpose of section 2 was to permit the big pulp mills of this country to obtain as much as possible of the woods of Canada in view of the fast disappearing American forests. The Government asked the court to consider the question of validity and the question of European treaty rights jointly.—M.E.B.

A NEW WATER DEVELOPMENT.

At Dundee Falls, Maine, on the Presumpscat River, a new power station for the S. D. Warren Co., paper manufacturers, is being erected. The dam structure, about 1400 feet long, is of earth with the power house and spillway of reinforced concrete, about in the center. The head to be utilized is 50 feet, with a wheel capacity of 4500 h. p. The concrete spillway is of the gravity suction type.

Power will be supplied by three-33-inch horizontal turbines of the S. Morgan Smith type, each capable of developing 1500 h. p. at 277 r.p.m. They are of the wicket gate type the gates of each wheel being controlled by a Lombard governor. Each wheel is direct-connected to an 800 K. W. General Electric generator operating 3-phase at 60 cycles per second, and at a pressure of 11,000 volts. In each case the exciter is on an extension of the generator shaft.

SULPHITE SPIRIT.

The Aktiebolaget Ethyl in Sweden has discovered a means for considerably increasing its production of alcohol from waste sulphite pulp lyes. It has been discovered that the lime mud is not enough to neutralize the free organic and other acids without the help of sulphate of ammonia, of which about 50 kg. are required for 100,000 litres of waste lye. The acids are then removed completely by precipitation, and do not hinder the alcoholic fermentation. The invention is the subject of French patent 446,717.

PULP AND PAPER TESTING

By E. R. D. I.

Here and aboad, not very little time and energy has again been spent lately, by pulp and paper makers, official laboratories and private chemists to ascertain whether the method employed to test the pulp moisture gives true values or not. And no doubt the subject is a very important one as slight differences in percentage of moisture may involve directly a considerable amount of money.

Especially to the way of sampling attention was often called in former papers whereas the chemical method, or its reliability was not so much in discussion. Of course this is meant entirely in a general way, as we could at once point out a number of authors who devoted a good deal of their time to find out if, and to what extent pulp or cellulose changes its quality and weight upon drying. But probably owing to the fact that some authors like Hoppe-Seyler, Grosseteste, Scheurer, Zacharias, Will, Buttner and Wislicenus, Renker, and the Royal Testing Laboratory, Berlin, found that cellulose does not change in weight when heated to 100-105-110°C, whereas others, Winterstein, Suringar and Tollens, Lepsius and Kirchner and Hofman stated that it diminished somewhat in weight, more stress was laid on the development of reliable methods of sampling. The contradicting results in these researches made it almost certain that the changes in weight would be so small as to be fully neglectable in practical work. As far as the author's experience has shown, this, with permission to say, old fashion way. to lay more importance on the method of sampling, has proved to be the better policy. It was only a little while ago the writer found a tester in a paper mill who used still the most primitive method of sampling, but took great pains that the temperature in the drying oven would not exceed 105°C. Somebody had told him that a variation in temperature would endanger the reliability of his tests to a great extent, and unable to get and perhaps to handle a good chemical balance the idea of finding out himself never entered his head. This, however, is only one example, and sorry to say, by no means the only one.

In regard to the change in weight by heating chemical pulp of any kind to a certain temperature, we have had quite a number of excellent publications the last few years, and from all we can now conclude with certainty that industrial pulp does not gain or lose upon heating to 110°C. That is for practical work and for a good deal of scientific work, too. Of course, if a certain sample has to be used for an exact test, as cellulose determination or the like, it should be borne in mind that in one part of the material the moisture can be tested only, and that another portion has to be taken for the quantitative experiments.

One of the last papers which deals with the moisture test in a scientific maner, is one from Mr. F. Zweigler, who has shown that a minute increase in weight takes place when pulp is heated to about 110°C., as the fats, rosins, gums and lignin constituents are attacked by atmospheric oxygen. So small is the addition in some cases, that in fact it may be said, it is a surprise it has been found. Mr. Zweigler's figures vary from 0.01% for mechanical wood pulp to 0.08% for bleached straw cellulose. Brown wood pulp taking rather a place by itself, showing an increase of 0.17% due to lignin substances.

Mr. Renker, in 1909, could not come to a definite conclusion in regard to changes in weight on heating, although according to him his experiments tend to show neither loss nor gain.

The Royal Testing Laboratory, Berlin, in the same year found also that pulp could be tested at temperatures from 90-105°C, without noticing any remarkable change in weight.

As far as my own experience goes there seems to be a slight loss with certain kinds of pulp, when in other cases, and no doubt they are the more frequent ones, no changes could be noticed. As all experiments with the exception of some of them, which had to be made in conjunction with the isolation of pure cellulose from wood, jute and different pulps, were intended for mere technical purposes, no further researches were made.

Mr. Zweigler's treatise gives, however, several points outside the particular moisture tests, which raises the value of his work considerable. That is, that he pays attention to qualities of his raw materials, which to the less well giuded would seem rather negligable. These qualities are the respective amounts of hydrated, hydro and oxy cellulose. We can to-day determine these, perhaps wrongly called impurities, only to a very limited degree of exactness, but I have no doubt, further investigations carried on in this line will give not only very interesting results but will also help a great deal in practical pulp and paper making. From researches made so far we can hardly forecast the benefit which would be derived from such knowledge, although also in this line good work has already been done, as may be demonstrated by names of some of the authors—Van Bemmelen, Butschli, Cross and Bevan, Schwalbe, Friedlander, Buttner and many others.

With the growing feeling among the papermakers on this side of the Atlantic that something ought to be done to ensure a uniform and therefore most efficient supply of raw material for their paper machines, it will be necessary, not only to test the moisture in pulp of any kind but also to see that the chemical and physical properties of the stuff fed in the beater and to the machine are uniform and such, that all the required properties will appear in the paper. Having the certainty that the moisture test with proper sampling can be made absolutely reliable with little means it will be time to spend some more energy in investigations of the various fibre materials. If we take all the research work that has been done in regard to paper together with the vast amount of labor, time, money and energy that has been spent only to develop standard method of testing this finished product, and compare it with the advancement that has been made in regard to our thorough knowledge of the most used raw material, the cellulose in its various forms and compositions, one will find that a good deal more work should be done with the latter. Of course there are big problems yet to be solved as regards paper, but the writer is of the opinion that some of the most important questions cannot be solved unless we can throw more light on the constituency of the raw materials and the processes of producing same. For instance, if we consider the process of sizing paper. Good work has been done already but also much time has been spent in vain. For example, it strikes one as rather peculiar when some purely scientific man tries to explain the process

by reactions in flasks and reagent tubes without having any fibre present, or when on the other hand, a nothing but practical papermaker is endeavoring to solve the problem in his beater and on his paper machine, feeding raw material, about which he does not know anything, as he is depending simply on his eye and probably on the way he feels. He often can not realize that to-day he is feeding stuff to the beater with 98% pure cellulose substance in it, to-morrow his raw material, although it has the same appearance, contains only 94%. To say nothing of other, especially physical properties of the fibrous materials. So much about the sizing. But what do we know about the beating, bleaching, coloring, drying, the weight, strength and other chemical and physical properties, not to speak of the variations which result from the use of so many different raw materials which are used in the paper trade of to-day? It is in this line that much more work has to be done yet, but neither the purely scientific chemist, nor the only practical papermaker will fully succeed in the attack of these problems

TRACK SCALE ALLOWANCES.

(Special to the Pulp and Paper Magazine.)

Ottawa, Ont., March 28.

A number of Canadian pulp and paper firms were represented at the hearing before the Railway Commission last week of the application of the railways for permission to abolish all track scale allowances—fixed allowances for variation in the tare of cars, extra weight of shipments due to moisture, ice or snow and inaccuracy of scales. These were fixed some years ago by the Commission under the late Judge Mabee and the railways now wish to abolish them altogether. Of peculiar interest to shippers of pulp and paper was the abolition, besides the 500 pounds on wood pulp and pulp wood as forest products of the extra 500 pounds usually allowed for shrinkage in transit.

Among the pulp and paper companies represented were J. R. Booth and the E. B. Eddy Company, of Ottawa; the Riordon Pulp and Paper Company, and a number of others. Mr. W. S. Tilston, of Montreal, represented their interests generally, while Mr. T. O'Neill, of Montreal, looked after those of the Eddy Company in particular. Among others represented were the Canadian Manufacturers' Association, for whom Mr. J. E. Walsh, their traffic expert, appeared; the Toronto Board of Trade, Mr. T. Marshall, and the Canadian Lumbermen's Association, Mr. Frank Hawkins, Secretary.

The case for the railways was outlined at the opening of the hearing by Mr. E. W. Beatty, of the C.P.R. In brief, he claimed that instead of flat track scale allowances for snow and ice, dunnage, etc., it would be better to leave it to the judgment of the weighmasters. The men who were now employed in such positions, he stated, were experts and fully competent to judge how much allowance should properly be made for ice and snow, etc.

In reply, Mr. J. E. Walsh urged that it had evidently been thought fair by the carriers in arranging their tariffs originally to make reasonable allowances from track scale weights to rectify any variation in the tare of cars or due to other factors mentioned. The Railway Commission in its former judgment had recognized that as practically not a car was weighed in the presence of the shipper, the latter would have no method of checking over the weighmaster's figures.

Mr. Frank Hawkins, representing the Canadian Lumbermen's Association, then presented argument with particular reference to lumber shipments. He read the resolution passed at the annual meeting of the Canadian Lumbermen's Association opposing any change in track scale allowances.

"Do you think this surplus due to snow or ice and other conditions should be individually weighed or the 500 pounds lumped?" asked the chairman.

"I think the experience has been that 500 pounds averages up very fairly," said Mr. Hawkins. He cited such factors as variation in the scales themselves—sometimes around 200 pounds—and in the tare of cars; climatic conditions; the fact that the cars contained refuse of all kinds. In the United States, it was stated, the railways had to furnish clean cars.

Mr. W. S. Tilston, representing the pulp and paper interests, then followed. He wanted to know why the railways proposed to abolish the 1,000 pounds allowance on wood pulp, which had been given since 1897, without discussion or advancing any reason for doing so. He thought the extra 500 pounds—over the ordinary 500 pounds' allowance on lumber—would be covered by shrinkage in transit. He read a letter from the Riordon Paper Company, stating that wet wood pulp averaged a loss of 1,000 pounds per car while being transporated, and wanted to know why, now that ths pulp industry was assuming large proportions, this allowance should be denied.

Mr. H. R. Erskine, manager of the paper sales department of J. R. Booth of Ottawa, testified as to the reason for this loss in transit. The product had to be shipped partly wet, for if it were thoroughly dried out it would be very difficult to "work" when it arrived at the end of its journey. The practice was to ship it about 60 per cent. dry, as dry as was commercially possible. Other witnesses supported this, while it was also stated that pulp wood was generally loaded in cattle cars or others containing refuse which it was impossible to estimate once the pulp wood had been piled in.

Judgment was reserved pending further hearing.

Mac.

JAMES McLAREN CO. HAS RIGHTS.

(Special to the Pulp and Paper Magazine.)

Ottawa, March 28, 1913.

The interests of the James McLaren Company, the Buckingham lumber and pulp firm, and those of the City of Ottawa promise to clash as a result of the likelihood of Great Whitefish Lake, on the Lievre, being chosen as the source of the Capital's water supply. The English experts who were secured to report on the question of the best available source of supply recommended going to the chain of lakes north of the city in the Gatineau Valley. Great Whitefish Lake is the most accessible of these, but it drains into the Lievre, and the McLaren Company, as well as some power interests who have rights on that waterway, claim that their charter gives them the right to prevent the use of the latter. Lowering its level as a result of drawing a water supply from it, they state, would affect their interests on the Lievre and they promise to oppose any such move.—Mac.

A portion of the small dam of the Barber Paper and Coating Mills, Georgetown, Ont., gave way recently and a small steel bridge rolled into the river.

PACIFIC NOTES.

(Special to the Pulp and Paper Magazine.)

With the rapid development of transcontinental railway routes, the growth of large cities and the general advance of the whole province, British Columbia's pulp wood resource is figuring largely in the estimates of those who see farthest into the future of the great coast west.

Every year the Pacific province cuts only one-fifth of the annual growth in her forests, and yet when the large merchantable trees are gone and the mighty firs and cedars which now cover the country have been made into houses and furniture for the use of man, the pulp resource will still flourish. More noticeable even that the giants of the coast is the wonderful second growth which is everywhere to be seen. The moist atmosphere and favorable seeding conditions make regeneration almost a certainty.

As times goes on processes will be found, as they have been found in the past to utilize the poorer species and the smaller sizes. The stock of pulp wood will constantly increase as a result of Eastern investigators' efforts to save on the initial expense of manufacture.

There have been made estimates from time to time, more or less hazy, as to the present stock of pulp wood. In the last week the following unofficial approximation has been made by a prominent official in the British Columbia Forest Branch.

South of the railway belt, 2,000,000 acres lodgepole pine and spruce; north of the railway belt, and east of the Cascade Mountains, 20,000,000 acres, spruce, lodgepole pine, poplar and cottonwood, much of it in an irregular stand on account of fires; lower Mainland west of Cascades and Islands, 2,000,000 acres spruce and hemlock; upper Mainland, north of Vancouver Island, west of Cascades, and coastal and Queen Charlotte Islands, 5,000,000 acres, spruce and hemlock. The stand is estimated to be in the interior or east of the Cascades, 10-25 cords per acre; along the Coast, 50 to 100 cords per acre.

It is probable that the forthcoming survey reports of the Forest Branch will contain some estimate of the stand, as the foresters in the field are instructed to gather all possible data consistent with the speed to be made in their recent extensive reconnaissance work throughout the province. Some of the private surveys which have been made for timber owners will doubtless reveal the condition of the supply, but these will not be collated for two or three years, if at all.

At the present time there are in operation two pulp mills out of the five which have been granted privileges by the British Columbia Government. They are the Powell River Company and the B. C. Sulphite Fibre Company, producing, it is understood, 100 and 50 tons of paper, respectively, per day. The Ocean Falls Company is closed pending reorganization. It is one of the largest of the mills and produces lumber as well as pulp.

The Powell River Company, with a plant 70 miles north of Vancouver has an available water power of 100,000 h.p., of which about 30,000 h.p. is now in use.

Mr. M. J. Scanlon, vice-president of the company, said in an interview in Victoria:—"We are producing, at our first mill, about one hundred tons of news print paper per day, and we expect to have the other mill, which has a capacity of one hundred and fifty tons, finished at an early date. Our product at present is in good demand both on this side and in the United States, and we sell all through the Pacific Coast country. We are having no difficulty of obtaining men of this type, but we have been educating new men in the business, and it is steadily becoming more widely known that we have mills at Powell River, with the result that men ar coming in gradually increasing numbers and finding work at our plant."

Discussing the resources of the company, Mr. Scanlon said: "I think that we may be said to have a perpetual supply of timber. We are taking care in our slashing to remove any element of danger from fire; in fact I may say we have reduced that risk to a minimum. The question of re-afforestation we have not yet gone into thoroughly, but it is our intention to do so as much as possible to secure the growth of younger trees."

Asked what he thought of the spruce supply, Mr. Scanlon stated that the company has found that just as good pulp may be obtained from other varieties of timber.

The Powell River Company employs a large number of men in its pulp leases in the north. A wonderful stimulus has been given to development in this way. Hemlock of small size forms the bulk of the cut.

American capitalists have been investigating conditions around Grand Forks, B.C., at the junction of the North Fork and the main Kettle River, up which the new transcontinental extension of the C.P.R. Crow's Nest route is to run, with a view to establishing a pulp mill of capacity of about 50 tons per diem.

There is an estimated supply of 400,000 to 500,000 cords of first-class cottonwood and a similar amount of spruce in the vicinity. The local sawmills are wastng vast quantities of slabs, etc., which could be readily converted into pulp. Water transportation of raw material to the town is very good, electric power is the cheapest in the province, transportation east, west and south is cheap and easy, and the town is growing rapidly. These factors combine to make the project a very promising one.

The pulp would be manufactured into paper in Spokane, which is under 200 miles away.—R. L. C.

AMERICAN NAVAL STORES ASSIGNS.

(Special to the Pulp and Paper Magazine.)

New York, N.Y., March 29, 1913.

The American Naval Stores Company of this city and Savannah, Ga., has assigned. Announcement of the assignment was made over the ticker on Monday afternoon, March 17, at four o'clock. The company is being prosecuted by the Government for alleged violations of the Sherman anti-trust law. The company claimed its credit was impaired by prosecutions in the United States courts as a "naval stores trust." A meeting of the creditors was held last Friday.

When interviewed by your correspondent, Secretary C. J. De Leach stated that the company had not lost a dollar and its assets at the present values would exceed its liabilities by $4,000,000. "But the credit of the company," he continued, "has slowly become contracted, due almost entirely to the persistent and continued assaults made upon the construction and contractual relations of the corporation by the Government in its suits under the anti-trust laws.—M. E. B.

Doom has sounded for the common roller towel and the public drinking cup. At a meeting of the Provincial Board of Health a resolution was passed advising the Government to secure the abolition of these utensils. The Board went into the whole matter and reached the conclusion that legislation would have to be introduced for this purpose. Paper towels and drinking cups will be substituted.

THE SILKWORM HAS A RIVAL

With the increase of the human race and its many new necessities, there seems always to arise at just the right time a method of supply. The old way of obtaining silk from the silkworm will continue probably as long as the world shall exist, but to care for the silkworms and to wind the silk is so slow and tedious a process that silk must always be high-priced and its use limited to the few. But now comes the modern invention of viscose or artificial silk from wood. Just as we had to abandon flax and cotton for making paper, and chop down trees to produce the tons and tons demanded, so now we are abandoning the silkworm with its slow and expensive processes, and are putting the trees into the mill, grinding them up, treating them in a certain chemical manner, most of which is secret, so as to produce not exactly an equivalent for silk, but in many respects a material that has wider adaptability and greater availability than silk. This new silk is readily manufactured into a close imitation of human hair, and for the various intricacies of feminine headgear of puffs and pads and frills and rats and of other things. This new silk surely has a decided advantage as it does not give the wearer the feeling that it came from some head of uncertain cleanliness or desirability. The artificial hair is even more cleanly than the natural, because it has gone through chemical processes which make it practically pure, literally so in the sense in which the term is commonly used.



Yarn Made from Wood

This new silk has a decided luster, and gives the fingers a pleasing sensation; it is not harsh and irritating, as some forms of silk fabrics are inclined to be. In lacework beautiful patterns may be readily formed, and patterns adapted to true silk lend themselves as readily to the artificial. It takes color readily, and hence is valuable for many kinds of fabrics where true silk, on account of its greater expense, would not be so used. The viscose silk is especially attractive for fabric that need to be repeatedly folded, as neckties that must be repeatedly tied and untied, or ribbons that are to be formed into bows and similar objects.



A Close Imitation of Human Hair Made from Wood.

NO APPEAL.

(Special to the Pulp and Paper Magazine.)

Ottawa, March 29, 1913.

There is now very little possiblity of any appeal being taken against the judgment of the Railway Commission authorizing increased rates on pulpwood from Ontario, Quebec and New Brunswick to the Eastern States. The shippers who originally opposed it have now, apparently, become resigned to the decision and are waiting to see how it will work out when it comes into effect in August. The inclusion of free news print and wood pulp in the United States tariff schedule, now a certainty, together with the higher freight rates on the pulp wood are expected locally to have a splendid effect on the market for Canadian paper, while there is little doubt the ground wood situation will also greatly improve.—Mac.

POTATOES WRAPPED IN PAPER GOOD SELLER.

One Rusk County, Wisconsin, farmer marketed his surplus of potatoes last fall at $2.00 per bushel. The tubers were wrapped in brown paper and packed as carefully as western growers prepare their oranges and other fruits for market. The demand for this specially wrapped stock was even greater than the grower had anticipated and the net returns were several times that received for ordinary potatoes.

DIRECT CURRENT POWER TRANSMISSION.

By A. G. M.

The last few years have witnessed in Canada a remarkable interest in the new Ture system of direct current series system. Mr. D. S. Bigge, the London engineer interested in this system, has in the last few weeks addressed a number of meetings, such as the Canadian Mining Institute, the McGill Faculty of Applied Science, in this connection.

The scheme is not entirely new in the Old Country, but has been little heard of on this side. It is practically the reverse of the alternating system in that the current is constant and the voltage variable. The most interesting part, however, is the use of the earth as the return conductor, in place of a cable. It is customary, however, in the best practice to have two cables, as usual, carefully insulated from the earth, still using the earth return, but having the second cable as a spare in case of breakdown.

There are a number of power instances where this system is unique in its application and eliminates all competition with the system of alternating current. Its chief advantages are as follows:

1. Long distance transmission of electricity in bulk, with ground return to distances of 400 or 500 miles.
2. The electrification of railroads, owing to the low cost of transmission, and feeders for the line, which in conjunction with the new form of high tension direct current traction motors, and trolley line would greatly reduce the construction and operative costs.
3. The possibility of the economic linking up in series of a number of small water powers and transmitting the power to a marketable centre.
4. The entire elimination of induction and surging upon the transmission lines as experienced in alternating current systems, and consequent reduction in the cost of insulation.
5. The simplicity and low cost of the transmission lines when using the ground return.
6. The application to pulp mills or other industries which allow of high power direct current motor drives, in series with the line without any transformers. The greatest simplicity and efficiency is effected in this way and promises to be a most interesting development to the ground wood industry in Canada.

The chief difficulties are those of insulation since it is necessary to insulate the generators from the water wheel as well as from its base and when high voltage such as 200,000 volts are employed this becomes a neat problem, but has already been satisfactorily solved. The drop in voltage is effected by each motor in series instead of having a transformer with the various motors working on constant voltage.

Another unique application is the linking up of a number of small water powers which may be separated by distances up to 400 miles so that their power and voltage is additive. This has been demonstrated at Moutier and Lyons, in France.

A further application of great promise is the electrification of railroads, which will allow of power being received at various points along the line, connected in series and thus avoid the usual drop in voltage over long lines.

On the whole, the application of this new system is most attractive to pulp and paper interests, and although it is not without its difficulties, there is no doubt that in most of the conditions of pulp manufacture, the system is much more satisfactory than the alternating current.

FROM MONTREAL.

(Special to the Pulp and Paper Magazine.)

Montreal, March 29, 1913.

Reports from various parts of the country indicate that the pulp and paper industry is making satisfactory progress. Many companies who have reported in regard to the past year's business, show a very satisfactory increase in earnings, while in other cases plans for development and expansion are being put into effect. Another feature which indicates the growing importance of the industry is the attention it is receiving from the Legislature of New Brunswick. Recently Premier Fleming introduced a bill entitled "An Act Respecting Crown Timber Lands of the Province," which is expected will materially aid the industry.

The following are some of the details in regard to the progress being made by pulp and paper companies in Eastern Canada. The Riordon Pulp & Paper Company has just made public its report for 1912. This shows net profits of $306.834, an increase of $54,000, or 25 per cent. This large increase is regarded as extremely satisfactory, and as being indicative of the stability of the industry. Last year this company made a 6 per cent. bond issue of $1,500,000, at which time the estimated profits for the year 1912 would be $300,000. It is interesting to note that the estimate was well within the limit.

The Laurentide Company has filed a plan for its proposed hydro-electric development on the Ste. Maurice River at Grand Mere. The company have let a contract for the work to the Talbot Construction Company of Dayton, Ohio, who are at present engaged in preparatory work. The development is to be on a site already occupied by the company, and is in the nature of an increase. The Laurentide Company have now 20,000 h.p. developed, and when the new work is completed, will have an additional 50,000 h.p., which will be ready some time in 1914. Despatches from Halifax state that a new sulphite mill, which is the first of the kind in the Province, is to be erected at Bear River, Nova Scotia. It is also announced that both local and outside capital are interested in the venture. The facts in connection with the new venture just passed the New Brunswick Legislature mentioned above, follow in detail:

The interests of the large limit-holders are reasonably protected, while the small operators are to be given a reasonable opportunity for successfully carrying on their mills. The principal provisions of the bill are: For the encouragement of the establishment of pulp and paper industries in the Province, so that New Brunswick may have the benefit of having its raw products manufactured within its borders.

Two classes of licenses will be issued on and after August 1st, next, viz. (a) the pulp and paper license; (b) the sawmill license.

The pulp and paper license is renewable from year to year for a period of thirty years, and then may be extended for a further period of twenty years subject to the payment of a bonus for a thirty-year privilege and at the expiration of that time of another bonus for the next twenty years. The sawmill license is renewable from year to year for twenty years, and may be extended for a further period of ten years, with bonuses payable for the privilege of each period, the same as with the pulp and paper license.

Present license holders must notify the Surveyor-General by July 15th, next, that they will come in under the new licenses on August 1st, 1913, or continue under the existing licenses. The power to determine

the stumpage rates and make regulations governing these Crown lands, is vested in the Lieutenant-Governor-in-Council. Provisions are also made for the encouragement of conservation of the forests by allowing operators who will set aside certain lands for a period of twelve years before the expiration of their leases, and not cut off, but allow them to reproduce, to have the privilege of cutting these lands for ten years after the expiration of the lease without payment of bonus and paying only a stumpage and mileage fee.

The firm of H. H. Price & Company, lumber merchants, which went into bankruptcy this month, made their statement last week, which shows that there is a sulplus of $167,687 and the assets are $539,842. The liabilities are $372,154.—R.

ARTHUR D. LITTLE LECTURES.

(Special to the Pulp and Paper Magazine.)

Boston, Mass., March 28, 1913.

Arthur D. Little, the well-known American paper chemist of this city, delivered an interesting lecture on paper-making before the American Chemical Society, at Hartford, Conn., recently, in which he speculated as to what would be used for paper manufacture when the pulp woods were finally exhausted.

"The matter of obtaining cellulose material for our paper," he said, "when our pulp woods are exhausted, is a serious one, and one on which much study has already been expended, both by scientists and business men. Some newspapers have been so vitally interested that they have sent men to make extensive surveys and reports on the situation. First was considered the corn stalk, which, although it makes good paper, is not available for use, because the great quantity required to keep a mill running for a year must be cut during a small season, and stored so that it will not deteriorate, which latter thing has never been accomplished.

"Bamboo cane is a more promising field. The bamboo reproduces itself rapidly and within a comparatively small area, one-fifth of which would be cut each year, the rest being in various stages of growth, a paper mill could run on indefinitely.

"The waste from sugar cane has also been made the subject of extensive research, and while for some time it has been found that owing to the impossibility of seperating the pith from the rind, no good paper could be produced; by the new Simmons process, which shreds the sugar cane, drys the sap out, separates the shredded shell or rind from the shredded pith, and sends the two products bailed to the United States to have the sugar extracted, the by-product can be used with amazingly good results.

"Waste paper is not so extensively used in this country as it is across the sea, but very good qualities of board can be made from old newspapers and magazines, which saves much good new material. It has been found impossible to work old paper over and make new sheets of it."—M. E. B.

The Paper Mills Directory of England, Scotland and Ireland for 1913 is now off the press. It includes a year book of the paper trade, wholesale stationers, etc. The fifty-third annual addition is much extended and improved. Simpkin, Marshall, Hamilton, Kent & Co., Ltd., London. Price, $2.50.

UNION BAG.

(Special to the Pulp and Paper Magazine.)

New York, March 29, 1913.

The Union Bag and Paper Company of this city has issued its annual report to the stockholders. This report shows net earnings for the fiscal year ended January 31, 1913, to be $540,716 , against $1,017,835 in 1912.

Although this report was not filed at the time action was brought against the Company at Trenton, N.J., by 21 of its stockholders who sought to have the company placed in the hands of the receivers, alleging "extravagance and stupidity in management"; the answer filed at the hearing in the New Jersey Chancery Court on March 15, contained virtually the same figures as were later given to the stockholders. Interests concerned in the litigation against the company are calling attention to certain items, especially in regards the disbursement of $330,000 in dividends, when the balance available for that purpose was only $50,898.

Concerning this situation, Edgar G. Barrett, president of the company, said, when interviewed by your correspondent: "Our earnings were sufficient to pay all interest charges, sinking funds or bond redemption, and the usual depreciation and extinguishing funds, leaving a balance of $50,898 applicable to dividends.

"We have just passed through a period of extremely low prices—a period that extended over a longer time than we had expected; but in spite of the fact that we were not making earnings, it seemed wise for a time, because of the keen character of the competitive situation, to continue the dividends. In December last, however, as the end did not appear in sight, it seemed wise and conservative to stop them.

"The selling prices of bags were very much lower last year than they have ever been before in the history of the industry. Since about 1910 the selling price has dropped 25 per cent. This brought some grades of bags down below cost, but recently prices have improved, and we believe higher prices will rule for the coming year, which, of course, will make a material addition to our earnings.

"Prospects for business for the coming year indicate that not only will all fixed charges be earned, including sinking fund, depreciation fund, etc., but the dividends will be much greater than last year. It is too early in the year to predict whether earnings will cover or exceed the four per cent. dividend which has been paid each year on preferred stock of 1907, until last December.

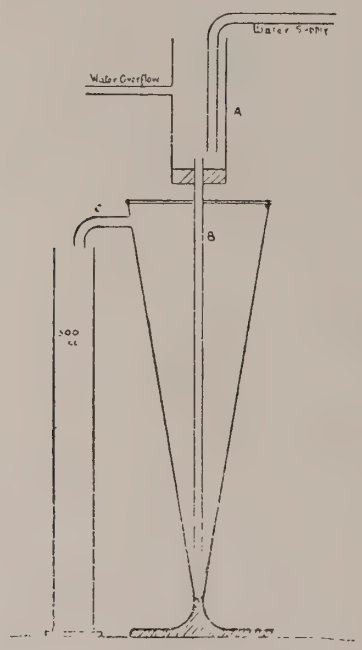
"The recent attack on the company has the backing of a very small minority, only about 2 per cent., in fact, of the stockholders. Many, if not all, of these are represented in the litigation without expense to themselves, as stipulated in a clause of the circular sent to the stockholders by those directly responsible for the litigation. I think it should be stated that there is much more back of this attack than appears on the surface, and if the desire of the parties at interest should be literally carried out, which I do not expect, there might be absolutely no protection for the stockholders. The integrity of the company might be broken down, for while there are no charges involving the solvency of the company, it is asked that a receiver in equity be appointed and that all directors and officers ousted. This company has absolutely nothing to conceal, and feels sure that the future will justify the past services of its officers and directors."—M. E. B.

TESTING CHINA CLAY.

In a form of elutriator invented and supplied by Messrs. Sindall & Bacon, the ordinary funnel is replaced by the overflow apparatus A, which permits an exact flow independent of fluctuations. The water flows into the apparatus A, at a rate in excess of that required by the elutriator tube B, and this excess runs away through the overflow tube, ensuring a constant head of water and therefore a constant rate per second down the tube B.

Sindall & Bacon's Elutriator.

If the discharge orifice of the tube B is carefully prepared to deliver some convenient quantity of water per minute under a given head, such as 100 cc. per minute, the conditions are then absolute. By using tubes of varying discharge, it is possible to fractionate the clay or mineral into various grades. Thus a series



of tubes delivering 50, 70, 80, 100, 150, 200 cc. per minute could be used in succession.

Two clays examined in this way gave the following results:

Table showing percentage of clay separated out by fractionation.

Flow.	Sample A.	Sample B.
70 cc. per minute	49.7	61.8
100 cc. per minute	15.1	16.0
130 cc. per minute	5.3	4.5
160 cc. per minute	13.2	8.1
Residue	16.5	9.4
	99.8	99.8

This test can be effected in two ways.

(a) By keeping all the waters and allowing the fractions to subside, subsequently decanting and weighing off the suspended matter when dried.

(b) By elutriating a number of samples of the clay of equal weight and weighing the residue left in the vessel after each washing, using the 70 cc. tube on the first sample, the 100 cc. tube on the second, and so on.

The disadvantage of the former method is the accumulation of possible large volumes of water, though, on the other hand, the weighing off of several lots of clay is avoided.

Actual filtration through a dried weighed filter paper may be avoided by careful decantation of the water, and washing the residue into small beakers for further settling and decantation. The residue can then be poured into a weighed watch glass, and the final traces rinsed out.

The fractionation of the clay by this method affords useful information as to the condition of clay in showing whether it is a uniformly coarse clay or a finer clay contaminated with a small proportion of heavy particles.

STRAW IN FRANCE.

The growing scarcity of wood and the widening demand for wood products in new lines of manufacture is shown by the introduction in France of a process of making a wood substitute out of straw. The invention is calculated to render great service in carpenter work by advantageously replacing natural wood. It took six years of study and experiments to solve the problem, but the latest results are said to be very satisfactory.

The process of manufacture consists in transforming straw into a solid substance, just as resistant as pine or oak; the stalks are cut up by a machine and reduced to a pulp by boiling and the addition of certain chemical substances. The pulp, reduced to a homogenous consistence, is finally compressed under very heavy pressure. A raw material is thus obtained to which can be given all shapes, planks, beams, rafters, laths, beadings and mouldings of all dimensions.

This artificial wood, according to Journal du Commerce du Bois, can be easily sawed. Straw being everywhere comparatively cheap, the cost is not high. The same straw wood also serves as fuel, it gives great heat and little smoke. It can also be used for the manufacture of matchs; it is better than poplar and costs much less. It is made into wrapping paper, into bottles, little pitchers and other similar articles. It lends itself readily to other uses uses and its employment will soon enter into common practice.

JEFFREY SWING HAMMER PULVERIZER FOR LABORATORY USE.

This machine is built especially for laboratory use in reducing many materials to a fine uniform product for various purposes. It is especially useful in sampling coal and limestone, as it not only reduces the sample to a comparatively fine powder, but thoroughly mixes it into one homogenous mass.

A very fine laboratory outfit consists of a pulverizer directly connected to an electric motor. Both are mounted on a single cast iron base and may be placed in any convenient position furnished complete, ready to run.

For sampling coal and kindred uses it consists of a hopper large enough to hold a batch in which the material is held by a sliding valve at the bottom. This discharges into a second hopper which leaves an opening into which material may be shoveled without regard to the upper hopper.

It is usual to use four sections of sampling chutes, so that but one-sixteenth of the original material is delivered at the bottom of the chutes, but this material will be a true sample of the whole lot. Manufactured by the Jeffrey Mfg. Co., Montreal, Que.

THE MUNICIPAL SCHOOL OF TECHNOLOGY, MANCHESTER.

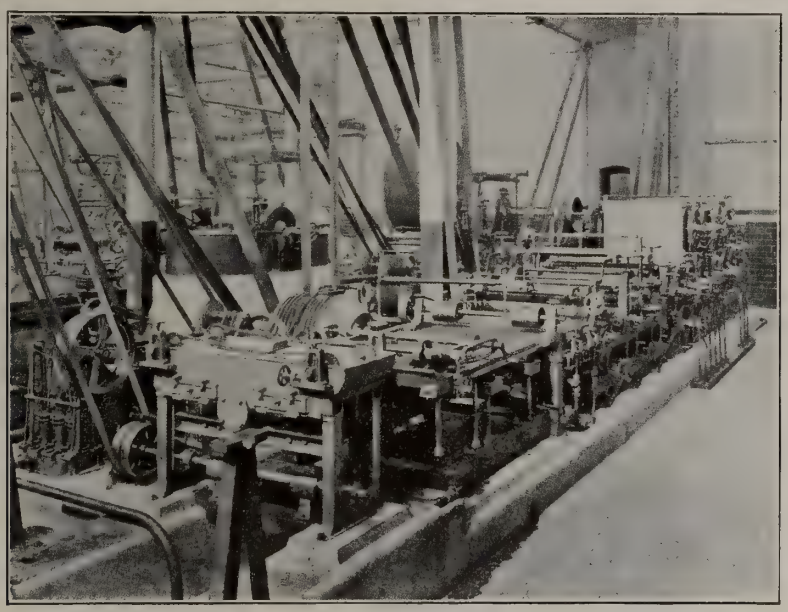
By Olivier Rolland.

This institution is designed to give courses in:
Mechanical Engineering.
Electrical Engineering.
Municipal and Sanitary Engineering.
Architecture and the Building Trades.
The Chemical Industries, including:

(a) General Chemical Technology.
(b) The Chemistry of Textiles.
(c) Paper Manufacture.
(d) Metallurgy and Assaying.
(e) Brewing, Photography, etc.

After an attendance of three years in any of the above named branches, the student, who has passed satisfactorily the examinations, is graduated with the title of Bachelor of Technical Science, B.Sc. Tech.

The school has cost £400,000. It is a splendid building, of the French Renaissance style of architecture.



PAPER MACHINE,
Manchester School of Technology.

The laboratories are so vast and so well equipped that they can be compared with those of the great universities, as, for instance, McGill.

The head of the Paper Manufacturing Department is Mr. Y. Hubner.

The equipment comprises a fully-equipped papermaking plant as follows: Rag boiler; breaker with drum washer, one roll fitted with bronze knives and one basalt lava roll; draining chest; hemmer beater with drum washer; stuff-chest with regulator; sand-tables; flat strainer to conduct the pulp either to the hand-made or machine plant; hand-made plant with vat, moulds, couch press, special sheet drying apparatus and sheet and plate glazing calender; Fourdrinier papermaking machine with suction boxes, dandy roll, and patent couch press, two wet presses, two batteries of five and three drying cylinders, special felt drying cylinders, slitter knives, winding apparatus; re-winding apparatus; length and cross cutter; ordinary and friction calender; embossing calender; paper testing laboratory; microscopes and all other appliances for microscopic work; various types of micrometers; humidifier; hygrometers; Hartig-Reusch, Leuner, Wendler and Schopper tearing machines for various classes of paper; tearing machine for single fibres and fibre bundles; folding and crushing machine; paper burning apparatus; chemical and special ash balances; paper scales; wood pulp drying stove; testing apparatus for ink and water resisting and absorbing qualities of paper, etc.; a special laboratory and dark room equipped for micro-photographic research.

Besides a general scientific training, this course comprises lectures delivered by Mr. Hubner, who is a clear and interesting lecturer.

Lectures concerning: History of Paper Manufacture; Cellulose; Raw Materials; Treatment of Rags and Rag Substitues; Breaking; Bleaching; Beating; Loading; Engine Sizing; Stuff Chest; Regulators; Sand Tables; Strainers; Hand-made Paper; Tub Sizing; Drying; Fourdrinier Papermaking Machine; Yankee or M. G. Machine; Cylinder Machines; Single Sheet Machines; Drying; Finishing; Cutting; Manufacture of Mechanical Wood Pulp and of Cellulose from Wood; Soda Recovery; Purification of Waste Waters; Water and Water Supply; The Dyeing of Paper Pulp.

As for the laboratory course: The practical work will comprise chemical and physical investigations and tests in the paper-testing laboratory, including microscopy of the fibres used in the manufacture of paper; preparation of microscopic objects; micro-chemical reaction; tests with the tearing machines; tests with the appliances for measuring the thickness of papers; resistance to tearing; rubbing and folding, moisture tests; ash analysis; tests for sizing, loading, colors, ink-resisting qualities, etc.; testing of paper specialties; photo-micrography of fibres.

Trials of a comparative nature concerning the sizing, loading, dyeing of papers, are made in the laboratory, and on a larger scale on the small papermaking machine.

The Technical School is one of the finest in the world.

Damage to the extent of $70,600 was caused by a fire which broke out in the woodworking plant of the McAuliffe-Davis Lumber Co., Ltd., Peterboro. The building was completely gutted and flames destroyed much valuable machinery.

HYDROGEN PEROXIDE AS ANTICHLOR.

Besides being a well-known bleaching agent, hydrogen peroxide is also an excellent agent for removing from the pulp the last traces of chlorine after bleaching. The oldest antichlor is the hyposulphite of soda of photography, which forms with the chlorine sodium chloride and sulphuric acid. Hence when it is employed, careful washing must follow to eliminate the sulphuric acid, which might otherwise shorten the life of the fibres and color them brown. Another disadvantage of hyposulphite of soda is that it gives the pulp a yellowish color. It has been often asserted that the coloration is attributable to the indiscriminate use of the hyposulphite, which is a powerful reducing agent and partly counteracts the oxidizing effect of the chlorine, the fibres being thus partly restored to their original color.

An antichlor also frequently employed just now is sodium bisulphite ($NaHSO_3$). This is oxidized by the chlorine into sodium sulphate. This must also be removed by careful washing, for an excess of the bisulphite must of course be employed to be afterwards again washed out. A certain quantity of the bisulphite is thus wasted. If the washing be deficient, it is certain that the bisulphite remaining will be quickly converted into the sulphite with production of sulphurous acid, as can be determined by the smell. Under the action of the air the sodium sulphite changes into the sulphate, which has no detrimental effect, but the sulphurous acid forms with the moisture of the air sulphuric acid, which has a decidedly injurious effect on the fibres.

Finally, since the bisulphite must be employed in excess, it acts not only as an antichlor, but, like the hyposulphite, though in a somewhat less degree, counteracts the bleaching effect obtained by the chlorine.

Hydrogen peroxide obviates these defects; it renders the chlorine compounds which remain in the pulp after bleaching quickly and surely inocous, without itself producing any detrimental effect on the fibres. The oxygen of the hypochlorite escapes with the active oxygen of the hydrogen peroxide into the air. Technically, there is therefore no drawback in employing an excess of this antichlor, which then simply completes the bleaching; owing to the cost, however, an excess will naturally be avoided.

It has been proposed to begin bleaching with a weak solution of chloride of lime and to complete it with hydrogen peroxide, which acts simultaneously as an antichlor for the first bleaching.

The employment of hydrogen peroxide in this way was first proposed by Professor G. Lunge, of Zurich. The drawback of the process are, firstly, that difficulties arise in storing the hydrogen peroxide, and, secondly, the cost; the latter point has, of course, much less weight if this agent is employed only to complete the bleaching.—Der Papier Fabrikant.

DRIVING STARTS SOON.

(Special to the Pulp and Paper Magazine.)

Ottawa, March 28, 1913.

In another week driving will commence on all the lumbering rivers of this district. According to Mr. C. J. Booth, of the firm of that name, the past season has been on the whole a poor one for cutting. There was not enough ice and snow earlier in the season, and when it arrived at last it came in too great quantities according to Mr. Booth. In connection with the commencement of driving a great scarcity of river drivers is noticeable. Every year this class of employes is becoming more difficult to obtain.—Mac.

FROM THE UNITED STATES.

At a meeting of the directors of the Penobscot East Branch Log Driving Company at Bangor, Me., last month, Fred W. Ayer, president of the Eastern Manufacturing Company, was awarded the contract for handling the 1913 log drive of that company. Mr. Ayer's bid was $1.0999 per thousand. It is figured that the Penobscot drive will approximate 50,000,000 feet.

* * * *

The International Paper Company is planning the erection of an extension to its "C. R." mill at Watertown, N.Y. It is understood that the company will remove the machine from the Sewall Island mill and install it with another machine in the C. R. mill. The plan also calls for the erection of a sulphite mill to take the place of the one on Sewall's Island and an increase in the water power development at Wood's Falls. If this is carried out the Sewall Island plant will be turned into a power plant and electrical power generated, a large portion of which will be used for the operation of the I. P.'s three mills at Watertown.

* * * *

Niagara Falls, N.Y., now develops 74,000 horse power —more than it did a month ago. This is due to the power companies taking advantage of the expiration on March 4th last of the Burton Law, limiting the division of water from the Niagara River to 15,600 feet per second. The treaty between Great Britain and the United States permits a diversion of 20,000 cubic feet per second and to-day this treaty is controlling, owing to the lapse of the Burton Law. On account if this additional diversion, the Hydraulic Power Company is developing 54,000 and the Niagara Falls Power Company 20,000 horse power more than formerly.

* * * *

Several important decisions on importations of wood pulp from Canada were recently handed down by the United States Board of General Appraisers at New York. The Central Railway of Vermont appears as protestant in one of the cases, but failed to appear at the hearing before the board. In overruling the protest, General Appraiser Somerville said: "The merchandise consists of chemical wood pulp, which was assessed for duty under paragraph 393 of the tariff Act of 1897, together with an additional or countervailing duty of 25c per 1,400 pounds, under the proviso to said paragraph. The importers protest against the assessment of said countervailing duty on the ground that the Canadian Government imposed no export duty on the pulp wood from which the wood pulp in question was manufactured. These protests were docketed for hearing on November 22, 1912, and although the importers were duly notified thereof, they failed to appear, or to introduce any testimony in support of their contention. From the record we are justified in upholding the action of the collector, which is presumptively correct. We therefore overrule the protest."

* * * *

The Great Northern Paper Company is installing a new paper machine in its mill at East Millinocket, Me. Greenleaf & Son, contractors, are making fast headway on the addition to the mill. The flooring and staging are practically completed. A new wall is being constructed which will make the machine room 40 feet wider. The new machine will require an extra set of boilers, also an extra brick stack.

* * * *

The annual meeting of the stockholders of the Black & Clawson Company, makers of paper mill machinery,

was held several weeks ago at Dayton, O., at which the following directors were elected for the ensuing year: O. M. Blake, A. C. Shinkle, C. A. Hinsch, George Helvey, Frank Trowbridge, H. L. Kutter and Benjamin Strauss. The directors convened shortly afterwards and unanimously re-elected the following officers for another year: Frank Trowbridge, president;; A. C. Shinkle, vice-president; H. R. Dilg, treasurer, and H. L. Kutter, secretary.

* * * *

The Perkins-Goodwin Company, widely known throughout the United States and Canada as commission merchants for paper makers' materials, moved last week from 366 Fifth Avenue, New York, to the Aeolian Hall, 33 West 42nd Street. The new quarters are very large and spacious and afford much more opportunity for the company's rapidly expanding business.—M.E.B.

NEWFOUNDLAND NOTES.

(Special to the Pulp and Paper Magazine.)

A number of English capitalists have acquired timber limits at Bay du North on South Coast, where they contemplate erecting a pulp and paper mill. Surveyors were empolyed there several months last season, locating sites for water power, etc., and men for survey and construction work were engaged for the coming season. They will resume operations again this month.

Surveyors have been at work at Deer Lake, in connection with the proposed pulp and paper mills for that locality. It is generally understood that construction work will commence there as soon as possible, and it is hoped to have the proposed dam at Big Rapids well under way before many months.

J. J. McCabbe will start lumbering at Glenwood. Mr. McCabbe has had considerable experience in the lumbering business.

The lumbering trade of Newfoundland was never healthier. New mills are starting up at various parts of the country, and yet the demand for the article cannot be supplied, with the result that prices continue to keep up.

The companies logging on the Exploits River are offering a bonus of $4.00 to all their loggers who hold on till the end of April.

The destruction of timber in Newfoundland through forest fires in former years has been terrific. It is estimated that over twenty-five million dollars worth of timber has been destroyed through that source. The appointment of fire ranchers and other preventative measures adopted by the Legislature the past five or six years, however, has done much to obliterate this yearly destruction.—B.

NEW PAPER PLANT.

(Special to the Pulp and Paper Magazine.)

Chico, Cal., March 29, 1913.

Interesting experiments are being carried on at the United States plant introduction gardens near this place, in the development of a new source of paper pulp supply. Of a large number of plants that have been under observation to determine their pulp-making possibilities, the one that gives promise of solving the problem is the "Mitibmata Chun," imported from China. This plant was discovered by one of the so-called agricultural explorers sent out by the Department of Agriculture.—M. E. B.

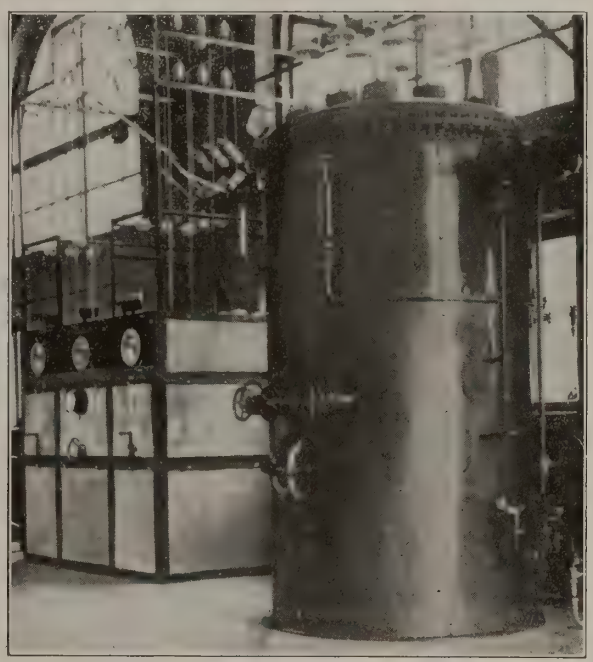
A. C.—ELECTRIC HIGH VOLTAGE BOILER.

By Ernst Kaiser, M.E.

The high voltage electric boiler produces saturated steam of any practical pressure. It is built for alternating current of any phase, so as to take the high voltage current without transformation. Its efficiency—that is, heat units embodied in the steam, in proportion to the heat units of the current consumed by the boiler—is 98 per cent., as proven by actual plants.

The cut shows a plant operating on 12,000 volts, 3-phase current. Its maximum capacity is 900 K.W. that can be readily regulated in many steps down to 150 K.W. According to the temperature of the water it produces between 1100-1500 kg. (2400-3300 lbs.) of steam, at 4 atm. (60 lbs.) pressure, that is used for a paper making plant. This electric boiler works parallel with a coal boiler plan.

The boiler and its switchboard are placed in the engine room, needing only the occasional attention of the engineer. The boiler itself has a diameter of approximately 6 feet and is 10 feet high, does not cause any dirt in the engine room, and does not form any scale on



the inside, as the temperature of the water and steam is higher, than that of the surrounding atmosphere.

The application for such a boiler plant is where steam is used and current is cheap, while it would not pay to build a hydro-electric plant for the purpose of producing electric steam, unless coal is unattainable or very expensive. There are innumerable cases, where steam is needed and surplus electric power is available, be it that the hydro-electric plant has been built larger than needed for purely power and lighting purposes, be it that the hydraulic part is larger than the mechanical and electrical part of a plant and the capacity of the plant can be enlarged by simply adding one or two generating sets. There are again cases, when in peak off hours, during day and night, hydro-electric power is available to produce electric steam that can be had outside of coal steam.

Wherever a plant has surplus energy, it is worth while to investigate into the financial returns of such a plant, which are extremely high, while its cost is reasonable.

Opportunities for adding such a plant to an existing power plant will be found in the paper and pulp making industry, in chemical and textile plants, for their various drying and boiling processes. Another application suggests itself for heating power stations, factories and whole city blocks, as the present steam or water radiators can be connected to it.

There are now being built boilers from 500 K.W. up to any reasonable size and from 1000 volts of alternating current up to 20,000 volts or more, 10,000 volts being a good average voltage.

The first plants in North America are at present under consideration, for the purpose of demonstrating them and will soon be erected.

NEW BRUNSWICK LICENSES.

A measure adopted by the Provincial Legislature is expected to stimulate in a very decided manner the pulp and paper industry in New Brunswick. It provides for a pulp and paper mill license on crown lands, and the licensee must undertake to establish a pulp mill within three years, while at least 50 per cent. of the lumber which he cuts must be manufactured into pulp and paper in New Brunswick. Hitherto there has been no such stipulation in connection with the lease of what are called the crown lands in New Brunswick, and from which the province receives by far the largest part of its revenue. Heretofore the timber lands have been leased for a term of twenty-five years. The present lease will expire in a few years, and in adopting a new policy the Government has provided for two kinds of license. The person or company securing a sawmill license may renew it from year to year for twenty years, and the term may then be extended for another ten years. In the case of a pulp and paper mill license, it may be renewed from year to year for thirty years, and then for another term of twenty years. A bonus must be paid, however, for both kinds of license and for both periods. There are several pulp mills in New Brunswick and one small paper mill. There are immense quantities of raw material, and under the new law the industry will be greatly encouraged.

It is a singular fact that the Province of New Brunswick does not know the real value of its crown lands. There has never been a complete survey such as should be made. Under the new law such a survey and classification must be completed before August, 1917. The province will then know, approximately, at least, how much standing timber it owns, the varieties and value.—Financial Times.

PAPERMAKERS AND THEIR STATIONERY.

We have heard all our lives that the shoemaker's wife goes barefoot and the blacksmith's horse unshod, which may account for the fact that ordinarily the paper manufacturer uses a cheap grade of stationery.

It is noticeable that a large number of concerns engaged in the manufacture of paper, instead of advertising their choicest wares by using them in their own business, appear to be consuming the lower grades for which there is no market, or at least a cheaper price.

We would respectfully suggest that papermakers, whether engaged in the manufacture of high class specialities or other grades, should pride themselves in exhibiting the high class goods, which the industry is capable of producing, by adopting it for their own correspondence and office use.

The difference in cost between a good letterhead and a poor one is not material; certainly nothing like so great as the difference in impression made upon the public.

THE HOWARD SMITH PAPER MILLS, LTD.

The plant of the Howard Smith Paper Mills, Limited, Montreal, Quebec, now nearing completion, is situated at Beauharnois, Quebec, twenty-two miles south of Montreal, on the New York Central Railroad, Adirondack Division, and will be in operation this month.

The mill is being built for a two machine loft dried plant, the plans being so laid out that it can be enlarged to a four machine mill if the trade in the country warrants.

The main building, 164 feet long by 82 feet wide, four storeys and basement, was originally built for and operated as a woolen mill by the Dominion Woolen Mills. This building has been entirely reconstructed, an entirely new steel and reinforced concrete floor being laid for the main floor and steel columns and girders to strengthen the remaining floor.

The machine room is an entirely new building, 220 feet long by 65 feet wide, and is large enough for two machines, one of which is now being installed. In the basement of this room and directly under the dryer part of the machine is the filter plant, a gravity system with a capacity of 1,500,000 gallons per twenty-four hours, the raw water supply being so arranged that either the St. Louis River water or St. Lawrence River water can be used.

The beater room is 165 feet long and 85 feet wide.

The variable line of the paper machine is direct connected to a variable speed engine, and the constant speed line is belt driven from a steam engine, the exhaust from both engines being used in the dryers.

The mill manager is H. C. Courtney.

C. Howard Smith, the president of the company, has long been identified with the paper business in Canada, having carried on the Howard Smith Paper Company of Montreal, the largest paper jobbing house in the Dominion. The new company is the outcome of his energy and enterprise, and the plant will start under the most favorable circumstances.

According to the "Gas World," paper gas pipes seem to be coming into favor on the Continent of Europe. They are either made of paper pulp, moulded, compressed, dried and varnished, or are made of sheet paper passed through melted asphalt and rolled tight into tubes. These tubes are built up in successive layers, compressed and coated with fine sand, followed by a layer of silicate of alumina.

An unusually interesting exhibition will be held in Berlin in the Philharmonic and adjoining halls in the early spring, an exhibition of the German paper industry, which has more greatly developed of recent years than perhaps any other. Over 500 machines of world-famous firms will be at work, and every possible opportunity will be afforded for the study of this trade in all its phases. The newest and best technical and artistic improvements in printing and bookbinding will be shown, as well as artistic posters and postcards, and a comprehensive feature will be that devoted to office requisites, such as ledgers, almanacs and maps.

BRITISH TRADE NEWS

(Special to the Pulp and Paper Magazine.)

London, March 24, 1913.

J. E. A. Debuc, director of the Chicoutimi Pulp Company, has been on a visit to London in connection with recent business transactions. Some months ago the news was published that his firm had entered into extensive contracts for supplying English mills with mechanical pulp, and, no doubt, his appearance in London had some bearing on this future business as well as other matters. Mr. Dubuc, after a short sojourn in England, left for Paris and he expects to make a stay on the Continent also before returning to Chicoutimi. When in London he spent considerable time with his agents. Becker & Co., Ltd., and in reply to the trade reporters he said that the mills at Chicoutimi were having their capacity doubled and from the beginning of April the output would be 500 tons of wet mechanical per day. The increase of business necessitated the enlargement of the mills. Asked if he could express an opinion as to whether it is possible for Scandanavian mechanical to compete with Canadian in the United States. Mr. Dubuc contented himself by saying that he would not like to say anything, or express an opinion on the matter at the present time.

* * * *

The Scandanavian pulp men are becoming more keen on meeting the wants of the American markets. They are consequently very closely watching the imports into England from Canada, the sources they come from and even attempts are made to regulate prices according to the demand from the States. Frequent enquiries are made in London about the export trade of certain ports in Canada and the probable production of mills in Quebec, and for these reasons interest has become manifested in Scandanavia as Canada's competitor in American markets. The recent attempts, also, to have Swedish and Norwegian pulp and paper placed on the same basis as Canada, in regard to importation in the United States, has also aroused a good deal of curiosity in England, and, putting all things together, pulp men on this side of the Atlantic have arrived at the conclusion that Scandanavians are strongly determined in concentrating as much of their interests as possible in trying to meet the demands of the American consumers of pulp and paper. In England, Scandanavian prices are pretty well ruled by Canadian prices. The general opinion prevails, also, that the Canadians stick to a decent average price, year in and year out, whilst the Scandanavian prices are like the pendulum of a clock. Again, Canadian pulp is always well packed and can always be relied upon by the English consumer.

* * * *

The British Stationers' Society held their 29th annual winter dinner on the 1st March in the Hotel Cecil, London—the favorite meeting place for all English paper men. The president, W. Bornecke, in proposing the health of the members of the paper trade, said the past year had been a very successful one and paper makers and paper merchants had all done well. Their prosperity was all the more remarkable, when they considered the difficulties experienced in the way of strikes. The export trade was also good, and the British colonies were increasing their purchasing power. Canada, he mentioned, was a good market, and although the production of news had increased in the Dominion, he still thought there was an increased outlet for many other qualities and grades of paper. Canada, too, was destined to become one of the largest suppliers of raw materials. The paper trade in England had now to face higher costs in the purchase of raw materials, and, with this growing expenditure, enterprise had been shown in order to reduce the manufacturing expenses, by the installation of improved machinery. Replying on behalf of the paper men, J. R. Brough, head of Brown, Brough & Co., said enormous changes had taken place in the paper trade during the last 30 years. At one time they secured good sized orders, but, to-day, they were rung-up on the telephone, given an order, and immediate requirements and promptitude was absolutely essential in order to retain their customers.

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The speech of Mr. Bornecke was rather interesting and his reference to the introduction of modern machinery in the paper mills has a good deal of significance. During the past year a great many mills in England and Scotland have been reconstructed and remodelled, and the expenses incurred in most cases have been considerable. There is a general tendency for motor-power all round, as it is found cheaper and very satisfactory. The Lancashire Dynamo and Motor Company have just supplied West Marsh Paper Mills, at Grimsby, which belong to Peter Dixon & Sons, Ltd., with two 350 h.p. motors for driving the Walmsley paper-making machines. These motors are of the variable speed type—the speed being varied by shunt control between 275 and 530 r.p.m., and by a series control between standstill and 275 r.p.m. The machines are arranged with two pedestal bearings and a bedplate, and are provided with half-couplings, the paper machines being driven directly. The same firm have also supplied thirteen other motors aggregating 148 h.p. and ranging in size from 5 h.p. to 25 h.p. Power houses are now in course of erection at a couple of mills in the South of England, and in the course of a few years a paper mill will be looked upon as an antiquated structure in the British Isles if there is an absence of an electrical installation.

* * * *

As briefly announced in the Pulp and Paper Magazine of March 15th, esparto shipments from Tripoli have been resumed, and already prices of this paper-making material have been reduced. Although the Tripoli authorities are harassing merchants with restrictive regulations, the markets will be considerably augmented with further shipments. The absence of supplies from Tripoli during the past fourteen months were keenly felt in the British paper trade. So far the volume of business has not been large, and the demand for extensive new season's contract has scarcely yet shown signs of awakening. Meantime, consumers are fairly well stocked with deliveries on contracts.

* * * *

The important position of Lord Mayor of London—a position which brings the man who occupies it in close touch with King George V.—will, on the expiration of the present holder's term of office, be filled by Sir T. Vansittart Bowater, the well-known London paper man and mill owner. The honor, needless to say, is a distinguished one for anyone connected with the paper trade, and your correspondent predicts a hearty welcome for any pulp and paper man from Canada who cares to visit Sir Vansittart Bowater at the London Mansion House, when he is installed in office. He is genial and courteous, and a thorough and practical paper man.

A settlement has been arrived at between the British paper mill owners and their employes, with regard to the working hours. For some time past negotiations have been going on between the Amalgamated Society of Papermakers and the National Union of Paper Mill Workers, and the mill owners, and the result now arrived at is: In future all machines in the northern mills will be shut down not later than 1 o'clock on Saturdays, and, when possible, wires, felts, etc., will be put on during the week, so that in only exceptional circumstances will it be necessary to work after 2 o'clock on Saturdays. Work will again be resumed at 5 o'clock on Monday mornings. The result is considered a victory for the workers' unions, who have now served notice on their members, instructing them to loyally adhere to the terms of the agreement and that where notices are not posted by mill owners of the week-end stop, or no definite information can be obtained from them, a report is to be at once sent to the unions. The whole matter now lies in the hands of the mill owners to carry out the terms of the agreement and, of course, where there is a failure reported, trouble is bound to follow. The reduction in the working hours does not in any way decrease the wages of the employes.

FEATHER-WEIGHT PRINTING PAPERS.

In Scandinavia there are just now being published at a low price a number of editions of good books having paper which is very thick to the touch. Rags are only very little employed for such. These papers have the following composition:

First Quality.

20 per cent. bleached cotton,
20 per cent. bleached asp-wood cellulose (American),
20 per cent. Ritter-Kellner chemical pulp,
20 per cent. white paper shavings, free from wood and mineral,
10 per cent. bleached esparto,
10 per cent. waste paper (free from mineral).

Second Quality.

30 per cent. bleached Mitscherlich cellulose,
30 per cent. asp cellulose,
20 per cent. white paper shavings,
10 per cent. asp-wood pulp,
10 per cent. waste paper, about 2 to 5 per cent. loading material, not more.

Third Quality.

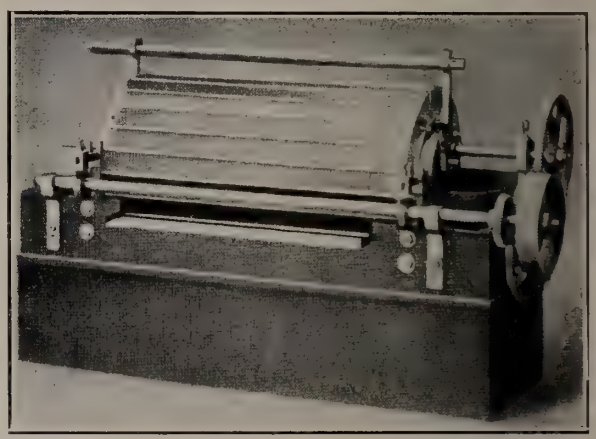
30 per cent. Ritter-Kellner sulphite pulp,
30 per cent. mechanical bleached with bisulphite in well-known manner.
20 per cent. electrically bleached sulphate-cellulose,
10 per cent. white paper shavings,
10 per cent. waste size, color not more than 2 to 10 per cent. mineral.

The kneader is more suitable for these qualities than the edge-runner, at least the edge-runner would need to be fitted with light stones or the duration of beating shortened. The beaters must have sharp knives and must be only thinly charged. The rag-pulp should be beaten 1—2 hours. The suction-apparatus and coucher should be worked only gently. The upper roll of the first press either is provided with a jacket or has a top-felt running round it.—Der Papier Fabrikant.

ROTARY SCREEN JUBILEE.

It was 50 years ago that C. Wandel installed the first rotary screen in the Eislingen paper mill, Germany.

This screen, which at once gave satisfactory results, depended upon the principle still regarded as best, viz., that the pulp flows from inside out. Its advantages, the automatic cleaning of the slots, together with the automatic elimination of the shives, were very striking in comparison with the then used more or less imperfect flat screens.



The invention had, however, to contend with many prejudices and it took a long time before the Wandel screen was acknowledged as a very important improvement and adopted in nearly all paper mills on the continent.

The Wandel screen may, therefore, with right, be regarded as a pioneer in screen construction and the purpose of these lines is only a reminder that 50 years now have passed since the first introduction of this apparatus, now nearly indispensable to the paper industry.—Specially translated from Der Papierfabrikant.

GERMAN PRINTINGS.

Germany is not a large exporter of reel paper to the United Kingdom. It is in printings or writings, not on reels that German mills do an important business with that country. The total imports last year of paper of the latter class amounted to £836,468, and of this sum the supplies from Germany accounted for £253,334. Hitherto it has been the policy of the Association of German Printing Paper Manufacturers to maintain prices on a profitable level in the home market, and to export the surplus to the best advantage, which, particularly in times of glut, means undercutting. This competition has at times been keenly felt by the British paper maker. According to recent advices, several members of the German Association are in favor of its dissolution, and in the event of such a happening increased competition would no doubt lead to a lowering of prices in the home market.

The House of Browne, Ltd., Montreal, are offering for auction the entire the holdings of the Manouan Lumber, Power and Pulp Co., near La Tuque. It comprises 65 miles of timber land and 5,000 horse power on the Manonan River. The date is fixed for April 3rd.

ELECTRICAL PROCESS OF REFINING CHINA CLAY.

The "Papier Zeitung" contains a description of a new "electro-osmosis" process for refining china clay which has recently been installed at the Saalthonwerke, at Leipzig. In the ordinary process of china clay refining, the clay-stone is ground up with water, the granular impurities are eliminated and the fluid sludge is allowed to settle until the water can be run off. The pasty residue is then further freed from water by means of filter presses. This process is unsatisfactory since the more plastic the clay the less readily does it part with its water in the presses. Moreover the sedimentation process does not efficiently provide for the separation of small quartz, mica and other mineral specks which are held in suspension by the clay.

The electrical process is the invention of Count Schwerin, and is being developed by the Gesellschaft fur Elektro-Osmose, of Frankfurt. It is interesting to note that this process is the result of the application of the principles of colloid chemistry, which have in recent years figured so largely in the advances made by pure scientific research. It is based on the fact that under the influence of a continuous electric current the clay colloids separate out from the fluid suspension and are attracted towards the anode pole, so that under suitable conditions the colloid particles can be collected in a drier condition than by mechanical pressure.

The description in the "Papier Zeitung" contains a report of the trial conducted at the Saalthonwerke prior to the taking over of a plant capable of producing three wagons of refined clay per day. The crude material selected to be treated was of the lowest quality available, in order to put the process to the most severe test possible. The crude clay was first passed through a breaking engine, the broken material was then elevated in buckets to a mixing machine where it was reduced to a uniform sludge with water and the necessary electrolytes were added to the sludge. The coarse impurities (sand and pyrites) were separated by a reciprocating sieve situated beneath the mixing machine, whilst the sludge was discharged into an underground settling vat where a further deposition of less coarse impurities was effected. From this vat the sludge was pumped into distributing cisterns situated above the osmose machines, flowing thence at a determined consistency and a determined speed, which vary for each grade of clay to be treated, uninterruptedly through the machines. The clay, under the osmotic action of the continuous current, collects on the anode pole which is in the form of a revolving roller, from which it is removed by a doctor and delivered on a travelling band which conveys it to the drying floor.

In the trial run reported, the clay was found to leave the osmose machines with an average moisture of 24.4 per cent. It was free from sand and impurities, and the guaranteed output was attained without exceeding the estimated current consumption. Since that time the new plant has been in regular use.

The clay purified by this process is absolutely free from gritty impurities, since the electric roller will attract only the colloidal matters of the sludge. The process itself has the advantage over the old process in being continuous, operated by less labor and occupying only a fraction of the space devoted to the old draining and settling tanks. The clay is marketed under the name of "Osmoton," and is said to be highly appreciated by paper manufacturers and other users of free plastic grades of china clay.

Paper makers would be interested to know whether some similar principle could not be advantageously applied to the treatment of paper machine backwaters

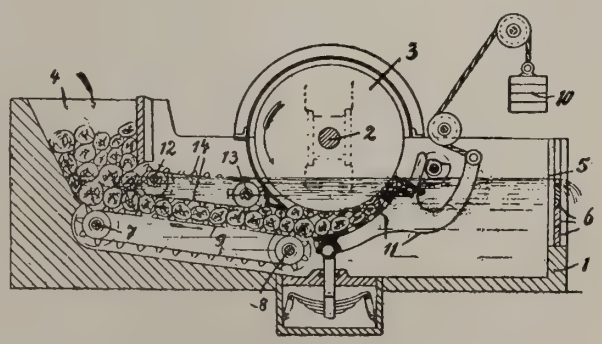
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CAN CONCRETE BE MADE IN ITSELF IMPERVIOUS?

The question of whether concrete can be made in itself waterproof was recently asked Leonard C. Wason, president of the Aberthaw Construction Co., Boston. In reply, Mr. Wason was very emphatic in stating that not only can concrete be made impervious under ordinary pressures, but even under extraordinary pressures. By ordinary pressures is meant pressures due to heads 10 feet or below, while extraordinary pressures refers to standpipe pressures. Mr. Wason states that his experience has shown that it is simply a question of well graded materials, proper proportions and thorough workmanship, to get the maximum density. With good work it is found that for maximum density a mix of 1.2.3½ is about correct, the aggregate varying from 3½.4. Mr. Wason remarked that the time the materials should mix is very important and that on the best work they have done the materials were kept in the mixer for five minutes. The amount of water is also very important. The point of placidity can be judged by the eyesight and the concrete should just barely quake. The materials after being mixed must be handled very carefully so that there will be no separation of the same. To make impervious concrete structures great care must be taken in getting the joints clean before going on with the next day's work. In Mr. Wason's opinion 99 per cent. of all leaky concrete building work is due to poor workmanship.

NEW SUBMERGED GRINDING APPARATUS.

In a German patent, granted to M. A. Biffar, Leipzig, on a new form of grinder for wood, the vertical grinder 3, carried by shaft 2, which rests on springs or weighted levers, revolves at a certain depth in a long trough 1,



into which a stream of water is kept constantly flowing at a certain level.

To the left of the grinder is a magazine 4, to contain the wood to be ground while at the right, an overflow 5, maintains the water level at the desired height. Under the magazine 4 is a conveyer 9, consisting of belts or chains revolving around cylinders 7 and 8 which receives the wood and carries it under the revolving grinder.

PULP AND PAPER FROM RESINOUS WOODS.

A Bulletin, No. 159, of exceptional value is just out by J. P. Veitch and J. L. Merrill, of the Leather and Paper Laboratories of the Bureau of Chemistry, U.S. Department of Agriculture.

The following conclusions have been drawn:

It has been fully demonstrated, both in the laboratory and in the mill, that paper of good quality can be made from pine wood. The Bureau of Chemistry has called attention to this fact and to the industrial opportunities in this field, in two former publications.

It is feasible to combine three well developed chemical industries—papermaking, wood distillation (in a modified form), and the manufacture of rosin oils—and thus to obtain from a single raw material, waste resinous wood, practically all the valuable constituents which it contains. The country's sources of paper, turpentine, rosin oils, and wood alcohol can be greatly augmented and the injury to forests by fire and insects materially reduced by the utilization of this wood. It is believed that the results here presented will hold, approximately, for good average lightwood, except as to refined wood turpentine, which should run higher than here found. Especially is this true of the long-leaf lightwood of North Carolina, which, experience has shown, yields more wood turpentine than does the lightwood of Florida. This fact is possibly due in part to climatic conditions, the longer and hotter summer of the South volatilizing more of the light oils.

The approximate yield for 4,000 pounds of cord air dry wood (3,200 pounds moisture-free wood) of the valuable products and the value of each, together with the total value produced from a cord, is shown in the following table. The values are approximate wholesale values at the plant:

Refined wood turpentine, 6 gals., at 40c.....	$2.40
Pine oils, 7 gals., at 35c.....	2.45
Rosin spirits, 11 gals., at 20c.....	2.20
Rosin oils, 40 gals., at 35c.....	14.00
Phenoloids, 12 gals., at 6c	.72
Crude methyl alcohol, 3.5 gals., at 35c.....	1.20
Unbleached pulp, 1,440 lbs., at $0.0175.....	25.20
Total.....	$48.17

Thus products worth $48.17 are made from wood which costs from $2 to $4 delivered at the works.

All these products are of good quality. The wood turpentine, pine oils, and rosin spirits are suitable paint and varnish thinners, especially for outdoor work; the rosin oils are suitable for making greases; the phenoloids are used for shingle stains and preservatives;; and the pulp for making a good strong brown wrapping paper, quite similar to that now selling from 3 to 4 cents per pound.

As has been previously stated, there are works which are being profitably operated, making wood turpentine and pine oils alone from this wood. There are works profitably manufacturing rosin oils and rosin spirits from rosin made from the living trees, and others profitably making paper alone from wood. The combination of the three units into one industrial development appears, therefore, to be well worth the careful consideration of papermakers, lumbermen, investors and especially of those interested in the conservation of material resources through the utilization of waste.

All mills having troubles with resinous woods or those interested in this development, should write the above department, enclosing five cents for a copy.

STATUS OF WOOD AND PULP IN GERMANY.

Recent issues of the Hamburg Handels & Boersenblatt contain two striking articles on the paper and cellulose industries, setting forth the anxiety in Germany in regard to supplies of raw material, says Consul Robert P. Skinner, Hamburg.

In Germany the cutting of wood has commenced and prices are above all expectations. Buyers for the cellulose manufacturers are penetrating the most remote forests, some buyers for southern Germany having obtained stocks at high prices in north Bavaria, and conditions in other European countries are more or less the same. Russia is at present the largest furnisher of wood for the paper trade, and competition for Russian supplies has increased substantially. One cellulose concern in southern Germany was obliged to contract for wood at prices 27 per cent. higher than those of the preceding year, and waste wood, to which no attention was paid in former times, is now actively sought.

Cellulose manufacturers have raised their prices 10 to 15 per cent. on contracts made for 1913 deliveries.

The large paper concerns show a disposition to free themselves from the small woodcutting factories by setting up their own cutting establishments, a circumstance which has led to the building of paper factories by the small woodcutters in order to provide themselves with an outlet for their wood. General costs in the paper industry also are rising. It would seem not unlikely that during the next few years straw and rags will be used again in the manufacture of paper, owing to the shortage of wood and the failure thus far to discover a new fibre available in the industry.

The paper export trade in Germany has been lively; the domestic demand steadily increases, so that the large exporters at Hamburg are more and more interested in the output of Norwegian and Swedish factories as a means of satisfying their foreign trade. This transit business at Hamburg has become enormous. Japan, China, and India are demanding increasing quantities of German paper, and Hamburg is said to have displaced London as the central market of Europe. The German industry supplies every class of paper with the exception of grades produced from esparto grass, a branch of the business in which English manufacturers are the leaders.

INFLUENCE OF THE DANDY ROLL ON SIZING AND CAPACITY.

In thin, coated paper a difficulty existed owing to the color penetrating to the rear side, says the Papier-Fabrikant. This was no better when a large amount of rosin size was employed. After repeated trials success was obtained by employing two dandy rolls, by working the shake with a short stroke and a high speed, by using such wire as No. 80 instead of No. 70, by causing the suction apparatus to exert reduced suction, and by moving slowly. Owing to the high vacuum formerly employed in this apparatus passages in the thin sheeet (25—35 g. per sq. m.), appear to have formed, which allowed the color to penetrate. By making the above changes this was remedied and the transparency simultaneously improved. The papers consisted of 70 per cent. mechanical wood pulp and the rest chemical pulp and old paper. Loading is here out of the question. This example shows that not only the beating and the rosin size employed, but also the treatment of the pulp on the paper machine have a far reaching influence on the sizing.

SPLINTERS IN ILLUSTRATION PRINTING PAPER

A practised eye will readily detect any splinters in the fresh supply of wood pulp, particularly on the smooth side of the boards. The engineer must, however, test every filling for splinters before he empties it. For this purpose about a tablespoonful of the beaten pulp will be put into a copper scoop, filled with water. When pouring it out slowly the smallest splinters are seen on the black ground. The last residue in the vessel should be particularly tested for splinters. According to the appearance, color and shape of the splinters their cause can frequently be deduced; e.g., fibres may have loosened from a stirrer, or the wood of vessels may have become rotten, or the cellulose employed may have contained splinters. In uncalendered paper the splinters are seen best when the sheet is observed in light falling slantwise. Calendered paper should be dipped into boiling water and then hung on a cord and left to dry in the air; all the splinters then appear very distinctly.

In the grinding works one sheet is preferably taken every three hours from the pulp running on to the board machine; the sample is taken best by wetting a sheet of writing paper and running it through the press-roll together with a layer of the mechanical wood pulp to be tested. The sheet thus obtained can then readily be transferred to the glass cleaned with chalk. After drying, coarse fibres or splinters then appear with great distinctness on the rough side.

PAPER STRING.

The continually growing price of hemp and flax has resulted in string being now made of paper. The following describes how the paper should be manufactured from which string is to be made:

Such paper must of course have great strength. As raw material chemical pulp is generally employed, it is best to employ a firm, tough, hard-digested sulphite pulp. The pulp is not bleached and owing to aniline coloring has usually a brownish tinge. Beating must be very carefully carried out, and the pulp should be gently beaten till greasy without allowing the fibres to be shortened. The paper is manufactured to give a weight of 20—25 gr. per sq. m., and is therefore of silk-like thinness. If it is desired to add rags to the pulp they must be first put in the beater by themselves and only added to the chemical pulp after their fibres have been sufficiently shortened. Besides rosin-size about ½ kg. of animal size per 100 kg. of pulp is put in the beater. When only chemical pulp is employed, beating lasts scarcely an hour. The strainer must have very fine slits. Both an open paper machine as well as one with automatic sheet-hauling are employable. Two suction apparatus are employed and the paper smartly pressed, dried carefully so that it does not become brittle, and rolled into rolls. The roll then goes on a reeling machine which cuts from it narrow rolls having an average width of about 35 mm.; the width depends on the diameter of the string to be made from the strip. A strip of 35 mm. width produces a string of about 1.75 mm. diameter. The laying of the strip to form the string is carried out by the so-called Nitschel apparatus after the strips have been again moistened. Paper string is very popular for packing light articles, e.g. those in confectioners', booksellers', and stationers' shops.—Der Papier Fabrikant.

INFLUENCE OF HEAT AND STORAGE ON PAPER CONTAINING MAGNESIUM CHLORIDE.

Earlier experiments had shown that fifteen days' heating at 30 degrees C. caused no appreciable change in the strength of papers containing magnesium chloride. On the other hand, when heated at 60 degrees these papers—as contrasted with those containing no magnesium chloride—were seriously attacked after 3 days; when heated for 3 days at 100 degrees they were completely destroyed, an effect undoubtedly to be attributed to the action of the magnesium chloride. Lately tests for strength have been again made on papers containing magnesium chloride which have been stored for 4 years at ordinary temperatures, and it was found that though the breaking-length and dilation had altered very little, the resistance to folding had changed considerably. Hence 15 days' heating at 30 degrees would not suffice to produce the same effect on the strength as 4 years' storage. It is probable that by heating at 60 degrees for some hours values would be obtained which approximate the modified values resulting from storage.

The above experiments prove that the waste-water of potash works, through which considerable quantities of magnesium chloride get into the river, are detrimental to paper manufacture because they affect the durability of the paper.—Der Papier Fabrikant.

SPANISH RIVER PULP AND PAPER COMPANY WILL TAKE ITS CASE BEFORE THE UNITED STATES APPRAISERS.

The Spanish River Pulp and Paper Company, which lost its contention before the Treasury Department on the entry of pulp and paper manufactured from Crown lands of Ontario upon which restrictions had been removed, is to take its case before the Board of United States General Appraisers and then, if necessary, to the Customs Court at Washington, and to this point has retained Albert H. Washburn, of Comstock & Washburn, the well-known customs attorney, to present its case.

The Assistant Secretary of the Treasury, James F. Curtis, on February 28th, last, sent a letter to the collector of customs at Detroit, Mich., denying the right of free entry to the Spanish River product.

It is expected that the case will be heard by the appraisers some time next June, and in the meantime protests will be made on all imports. In view of the large amount of paper which is likely to be exported in that period before a decision is rendered it can readily be seen that the amount of duty involved will soon reach a large sum. The method of agreements with paper mills is not in the way of a contractual restriction, as the American custom officials seek to have it called. The paper mill secures a provincial grant, and in return makes certain guarantees as to operation, investment, etc. This is not restricting operations.

There is every likelihood that the lighter wrappings are to enjoy a popularity unprecedented. It will be only a question of time until many that are now using the heavy and cheaper wrapping papers will adopt the lighter. In a business such as dry goods or drug stores, where a neat package is desirable, there should be no valid reason why the customer should be provided with a wrapping paper on the order of that used by dealers who sell rough goods.

BELTS FOR PAPER MILLS.

Leather belts are preferably employed when neither moisture nor high temperatures are met with. In moist rooms and also in dry, very hot rooms a cotton belt impregnated well is recommended. Cotton belts should not be wetted in order to shorten them, because after drying the belt will be only all the looser. On the contrary, whenever the belts stop they should be examined and shortened when necessary. When possible avoid crossing belts or guiding them in forks, because the edges are rubbed. Balata belts are equally suitable for moist driving, indeed they can run in water when this is not hotter than 30 deg. C.; the cloth side should always run on the pulley. In rooms containing acid or chlorine vapors, rubber belts should be employed. These also should not run in forks if possible, and must be protected from severe cold, because otherwise they crack when started running. Camelhair belts likewise resist chemicals and moisture very well; also, they transmit larger powers than rubber belts.

In general, it is important that the belts be selected strong enough and that they be carefully supervised, particularly at first. Every belt which is too weak for its load is used up in a short time. When a belt slips this is a proof that it is too weak. Strewing rosin, etc., not only injures the belt, but rosin is also thrown on to the wires and felts. One should always convince oneself that the belt is sufficiently strong, for only then can a felt-drive work economically.

SHORTNESS OF WATER IN BOILERS.

Explosions from shortness of water would be reduced in number if the attendants, instead of opening only the drain taps of water gauges, tested them several times daily in the following manner to ensure that both the steam and water passages were perfectly clear (says Mr. W. Buchan, H.M. Inspector of Factories, in a "Memorandum on Steam Boilers"): (1) Shut top tap. (2) Open drain tap. A full blow of water shows that the water passage is perfectly clear. (3) Shut bottom tap. (4) Open top tap. A full blow of steam shows that the steam passage is also clear. (5) Shut the drain tap. (6) Open the bottom tap. The water should not be sluggish in returning to the glass. These operations involve a certain amount of trouble, but they ensure that the glasses will indicate correctly, and also that the taps can be closed should a glass break. Gauges on water-tube boilers are often fitted with special rods and handles by which the taps can be operated either from the floor or platform at the gauge level. A tail pipe fitted to the drain tap and provided with a valve near the ground level is an exceedingly useful adjunct for frequent use, but it does not dispense with the regular routine testing mentioned above. Where there is a number of high-pressure boilers, the risk of scalding can be greatly reduced if the attendant, who tests the glasses, wears a mask and gauntlets.

Paste is a problem which many mills have not yet solved in a satisfactory manner. The difficulty of keeping it from souring is usually the one that gives the most trouble, when made in large quantities. If a well cooked paste of starch, flour and dextrine is made, the addition of formaldehyde is the best method of preserving it. With this it will keep perfectly sweet indefinitely.—A.G.M.

AND THE UTILIZATION OF SULPHITE WASTE LYES.

Some experiments have been made to utilize sulphite waste lyes for fertilizing purposes, not, however, using the substances contained in the waste lye directly as fertilizers, but utilizing them as nutriment for the soil bacilli taking up the nitrogen of the air.

The intention was, consequently, to find out if it is possible to prepare a nutritious substance from sulphite waste lyes, which can make the existence of nitrogen-consuming bacilli possible.

Nitsche answers this question as follows: "The waste lye is very suitable as a nutriment for all kinds of nitrogen-consuming baccilli, as soon as it has been correctly treated, so that the free acids formed or forming mainly SO_2 and H_2SO_4 are neutralized and a slight alkalinity, depending upon a small excess of lime is produced. A patent has been applied for, for a fertilizer based upon these facts.

The author is at present occupied with experiments relating to the consumption of nitrogen by bacilli which has been cultivated in soil fertilized with sulphite waste lye and cellulose pitch. The results obtained will be of interest, as they doubtless will give some idea how far the expectations of utilizing the sulphite waste lyes in this new manner may be realized. —Trans. from Wochenblatt.

TECHNICAL NOTES FROM GERMAN MILLS.

Iron Spots.

Iron spots in paper, may result from various causes: from the equipment of the hollander, from rust in pipe conduits, buttons, hooks and buckles in the rags, etc. It is advisable to equip every hollander with a device that will show numerically any dropping of the rolls. Rag sorting should receive the most careful attention and the half stuff, liberally diluted, should be carried over sand traps. Magnetic rakes are only effective when from four to six are built into the sand trap of the machine, so that the stuff must circulate through them. In a fine paper mill, 5 rakes picked 20 grains of iron particles from ten pounds of stuff.

Alum as a Cause of Turbidity.

The sheet copper lining of the hollander in a fine paper mill was blamed for causing turbidity in the stuff when hard sized paper was being made, the stuff in parts of the hollander not lined with copper showing less cloudiness. The sheet copper presented a bright, clean appearance. An excess of alum was regarded as the cause of the dirty, reddish color. In place of copper lining, a good coat of oil paint is recommended for iron hollanders. For fine papers the concrete hollander that has been given a clean smooth cement coat or a tile lining is best. To be quite certain that the alum causes no rust formation, it is customary, in some mills, only to add it in the distributing box of the stuff vat.

THE AGE OF PAPER.

History is often divided into periods named after the mineral from which man has made his tools. Thus humanity has passed through the Stone Age, the Bronze Age, the Iron Age, and we all belive that we are faring onward to the Age of Gold. According to a striking article in a New York magazine, it appears that the next stage in the march of civilization will be an Age of Paper

COMMERCIAL WOOD PULP PROCESSES—THE UTILIZATION OF SPENT EXTRACTIVE LIQUORS

By Thomas J. Keenan, F.C.S

In an address before the Pharmaceutical Society, Brooklyn, the editor of Paper described some of the operations involved in the manufacture of wood pulp and paper, contrasting them with the work of the pharmaceutical chemist. He demonstrated among other things that the same uncertainty which formerly prevailed in pharmaceutical work—and which still exists to some extent—regarding the extractive or alkaloidal strength of the ultimate tincture or extract is experienced by the papermaker in regard to the nature of the product he may obtain after extracting his wood and mixing the residuum with varying proportions of other materials, such as clay, alum and rosin, in a beater —the modern analogue of the stamping machine or crude mortar and pestle of the mediæval craftsman.

The application of chemistry to papermaking began with the process of treating wood with caustic alkalis or alkaline earths so as to extract a product to replace the pulp made from rags. It had not been overlooked, of course, that the use of chlorine bleach came first, following the discovery of chlorine by Scheele in 1774.

The timber, from which the pulp or cellulose destined to form the finished sheet of paper is produced, varies in quality according to cultivation, soil and climatic influences in much the same way as do the drug-producing plants and the quality and quantity of pulp varies according to the class of woods used and the nature of the process, so that uniformity of product is nearly as difficult in the one case as in the other.

The production of a finished paper of uniform and unvarying quality and characteristics, as determined by chemical and microscopical tests, is impracticable, owing to conditions inherent in the process of manufacture. The papermaker cannot tell to a nicety what proportion of the materials which go to make up his "furnish" or formula will be retained in the ultimate paper and what will go out with the water which is drained away from the pulp as it travels on the running wire of the paper machine to the press and drying rolls. In this respect the art of papermaking has not kept pace with the progress of other arts and crafts, though in the direction of mechanical improvements there are few industries in which mechanical invention has been so highly developed or in which engineering as a science plays a more important part, some of the special machinery in the equipment of a modern paper mill being examples of engineering skill that are little short of marvellous in the ingenuity of their construction and operation.

In the primary processes of separating the pulp or cellulose from the wood the pharmacist will see no analogy with any operation known to his art. On the contrary, he will observe methods employed and results obtained as astounding by their destructive wastefulness as by total opposition to galenical methods in the extraction of valuable plant constituents. It is in the intermediate and later stages of papermaking—in the combining of the "furnish," as the assembled ingredients of the formula for a given paper are conveniently termed, and in the testing of papers—that he will note familiar combinations and reactions.

The simplest form of wood pulp, that known as "ground wood," which forms the body of newsprint paper, is produced by pressing logs of cone-bearing trees, such as spruce, balsam, pine and fir, freed from bark, and cut into short pieces about two feet long, against revolving grindstones, under a stream of water, so that the disintegrated pulpy fibres, torn away from the log, obliquely or against the grain, can be run off into tanks and thence flowed away to undergo a screening and straining operation for the removal of refuse and unground lumps. As the pulp obtained in this way contains the sap, lignin and resin of the raw wood, substances that are prone to rapid oxidation and discoloration, paper made from it soon deteriorates, becoming brown and brittle, and it is a very perishable product. Pulp of this kind, however, is only used as an admixture with chemically prepared pulp in the manufacture of newsprint and the cheaper grades of book paper, or alone in the manufacture of boards; ground poplar wood being also used to some extent for this purpose.

It is the pulp produced by chemical means which has most interest for the pharmacist, the systems in use being, as already indicated, so much at variance with pharmaceutical work and especially the extractive processes employed in pharmacy. The chief processes are known as the sulphite, the soda and the sulphate. By the solvent action of the chemical solutions upon the nonfibrous constituents of the wood the cellulose is set free from its enveloping bodies and is recovered to the extent of nearly 50 per cent. of the total weight of the wood. The material which is extracted, consisting of all the soluble constituents of the wood—the gums, resins, tannins and the other valuable plant principles which encrust the cellulose—represents to the papermaker so much offal or waste, and, in the soda process, is destroyed by burning, the soda being recovered; and, in the sulphite process, washed into rivers and streams, with a total loss of organic extractives and chemicals.

It is scarcely necessary to emphasize more particularly the sharpness of the contrast that is here presented to the work of the pharmacist, where the end aimed at is the separation of the active and soluble constituents of the plant from the inert insoluble portion; the residue or mare, consisting of broken down woody tissue and fibres, being rejected. But to illustrate better the contrast in work, a brief description of the sulphite process of pulpmaking may be given. The wood, having been cleaned and cut up into pieces from two to five feet in length, as in the ground wood process, is chipped up into small pieces or chips about one-fourth inch to one-half inch thick and boiled under pressure in large steel digesters capable of holding twenty tons of wood at one operation and yielding ten tons of finished pulp. The digesters are lined with heavy cement backing faced with brick, pointed with litharge and glycerine, to prevent contact with the metal.

The sulphite liquor in which the wood is boiled is made by passing sulphur dioxide—obtained by burning sulphur, or iron pyrite, in special ovens—into tanks filled with water and a known quantity of slaked lime (prepared from dolomite). The results in the formation of a solution of the acid sulphites of calcium and magnesium, which is the active solvent agent. The chemistry of the reaction between the wood and the sulphite liquor prepared from dolomite or magnesian limestone is tersely but sufficiently stated by

Thorp ("Outlines of Industrial Chemistry," Macmillan, 1911, who explains that the acid sulphites react much like sulphurous acid, but the sulphites combine with the aldehydes formed in the first stages of the decomposition, producing stable and soluble double salts. The organic acids which are also formed decompose the bisulphites and form soluble calcium and magnesium salts, while the sulphurous acid gas is set free, causing a constant increase of pressure within the digester. The acid sulphites also tend to bleach the coloring matter of the fibres by forming colorless compounds with them, but this is a very unstable bleach and the original color soon returns when the pulp is made into paper. Bisulphite of calcium is unstable and decomposes readily into neutral sulphite, setting free sulphurous acid. This results in the precipitation of the neutral sulphite on the fibre, which is left harsh even after long washing. Magnesium bisulphite is more stable, and although less corrosive to the fibre, it dissolves the noncellulose matter even more completely than does the lime salt; further any sulphate or neutral sulphite which may be formed is easily washed off and the pulp is left soft and white. Sodium bisulphite gives a better product than either of the foregoing, and strong liquids can be made from it, but it is too expensive for general use.

When the digesters have been filled with the wood chips and the requisite quantity of sulphite liquor is added, the manhole or cover at the top of the digester is securely fastened, and steam is turned on gradually until the pressure reaches seventy or eighty pounds. The cooking is steadily maintained at this pressure for a period of eight to ten hours. At the end of this time the contents of the boiler, consisting of softened pulp, are discharged into large vats and washed. The spent liquor containing the dissolved resinous and nonfibrous portions of the original wood is allowed to drain away from the mass in the tank, which is then washed out and made ready for another charge.

It is the disposition of this spent liquor which constitutes one of the weightiest problems confronting the manufacturer of chemical pulps to-day. He is eager to be informed of a means of utilizing the liquor that would obviate the present necessity of throwing it into contiguous rivers and streams, for he realizes the danger that threatens the industry from the enactment of laws that will prevent him from turning his waste liquors into the watercourses of the country in such large quantities as has been done up to the present time.

By neutralizing the liquor and starting fermentation of the contained sugars alcohol of a low grade is produced from it in several pulp plants in Sweden, and by a patented concentration process used in the United States, a compound is formed from the liquor, named glutrin, which is utilized as a binder in roadmaking, as a tanning extract and as an adhesive for sand in making moulds and cores for iron castings in foundries.

But the profitable recovery of the organic matter dissolved from wood in the sulphite process is still an unsolved problem. The recovery of the innumerable organic substances dissolved in it, which is so fascinating a field of speculation for the chemist, has no interest for the pulpmaker, and is regarded as something of minor importance compared with the question of getting rid of the liquor in some way agreeable to the authorities and at the same time inexpensively and expeditiously. Although the problem has been deeply studied by able chemists for the past twenty years, it has yet to be tackled by a pharmaceutical chemist, and when it is we may look for the production of a whole series of new organic compounds.

In the soda and the sulphate processes of extraction there is effected a partial recovery of materials. By incinerating the spent soda liquor, after evaporating and concentrating it, the soda itself is regenerated, but there is here again a total loss of the organic derivatives of the wood, which are burned up in recovering the soda.

The soda process is used for soft woods like poplar, cotton and basswood, whereas the sulphite process is exclusively employed for coniferous woods. The chipped wood is boiled in a solution of caustic soda for eight or nine hours at a pressure of seventy or eighty pounds. The pulp produced is soft and bleaches well, making it especially well adapted for the manufacture of book and magazine papers.

Sulphate pulp is prepared by boiling the wood chips in a solution of sodium sulphate containing some caustic soda and sodium carbonate. It is a slower process than either the sulphite or the soda, as the period of boiling instead of being eight or nine hours, is sometimes extended to thirty-five hours, though good results are possible with a shorter cooking. The sulphate is reduced to sulphide by organic matter during incineration as a step in recovery, and by its presence in the liquor subsequently made oxidation of the fibre is prevented, so that a good yield of strong fibre is obtained. The so called kraft papers are made by this process, which is not a popular one, as the gases formed have a very offensive odor, which affect the whole neighborhood of the mill and make the atmosphere almost unendurable to human beings, and incapable of supporting plant or vegetable life.

Some of the technical operations of the papermaker afford abundant opportunity for exercise of galenical ingenuity and skill, as, for example, in the sizing of paper to give it a surface resistance to the penetration of liquids like ink, so that the paper may be written or printed on without the ink spreading over the sheet

In the sizing of newsprint and the common grades of book paper the sizing substance is the ordinary rosin of commerce, which is added in the form of rosin soap to the pulpy mass of fibres in the final stages of beating, and precipitated by alum, after the proper proportion of kaolin or china clay has been added (from 5 to 15 per cent.) and the yellowish color of the ground wood has been toned up by the addition of sufficient blue and red aniline dyes or other colors required to impart a white appearance to the finished sheet of paper. In order to insure the perfect distribution of the rosin throughout the paper pulp it is introduced as a liquid soap, made by boiling rosin with soda ash and adding water, the following being a typical formula:

Rosin	1,350 lb.
Soda ash	165 lb.

Boil for about four hours and just before boiling is completed add about thirty gallons of water. Strain through a No. 80 sieve.

A definite quantity of the soapy emulsion of rosin thus formed is mixed with the contents of the beater, and when it is well distributed, alum is added in sufficient quantity to salt out the rosin and take with it for precipitation into the fibres of the paper pulp the kaolin and other ingredients of the furnish.

It is a disputed question in paper chemistry whether the alum simply throws the rosin out of solution, salts it out, as it were, or combines with it to some extent to form an aluminum resinate. The weight of authority leans to the conclusion that no chemical combination takes place, good results in sizing with rosin having been obtained by the substitution of magnesium sulphate, or diluted sulphuric acid, for alum. At best the salting

out process as ordinarly practised is not distinguished by scientific precision, and much more alum appears to be used than is necessary. Alum and rosin when present in excessive amounts cause paper to turn a brownish color, and it gradually becomes brittle and disintegrates in consequence of the formation of free acids and other chemical changes.

The supply of rosin is not inexhaustible and some scarcity has already developed, and as a consequence of this and a corresponding advance in price, the papermakers are casting about for cheaper substitutes. Besides experimenting with the waste rosins of the rubber industry, an attempt has been made to revive the ancient use of starch as a sizing material, with a fair measure of success as regards ordinary printing papers, but unsuccessfully in the case of writing papers, which require to be almost waterproof in their ink resistance. In this process a compound of starch and aluminum silicate is deposited in the fibres by combining in a cooking operation a partially gelatinized starch with sodium silicate and saltng out the mixture with aluminum sulphate.

The more expensive hand-made papers are sized with a solution of gelatin, the sheets being dipped separately into a tub of the size and afterward hung up to dry, being finally pressed between zinc plates. In another process now more generally used the sheets of paper are carried by traveling felts through a bath of heated size, the excess gelatin being removed by the action of rubber or wooden rollers through which the papers are passed before leaving the apparatus, and the drying is effected on an extension of the machine. With the ordinary machine-made writing paper, however, the sizing material is mixed with the pulp in the beating engine, as in the case of newsprint and book paper, and there interlocked with the fibres by the alum salting out process previously described.

It is expected of the pharmacist that he should be well informed regarding methods of determining the quality of paper by microscopical and chemical tests at least—physical methods may be left to the experienced papermaker or leader, who is often able to make a shrewd guess at the composition of a paper by the mere appearance and feel of the finished product.

In "taking the fibre count," as the method of estimating the proportion of pulps in a paper is termed, the use of a staining agent is necessary, all vegetable fibres being transparent and nearly colorless. The best stain for this purpose is Herzberg's chlorzinciodine solution, which is made up as follows:

Solution "A."

Zinc chloride	20 Gm.
Distilled water	10 Cc.

Solution "B."

Potassium iodide	2.1 Gm.
Iodine crystals	0.1 Gm.
Distilled water	5.0 Cc.

Dissolve.

Dissolve "A" by adding the water to the zinc chloride in a beaker.

Dissolve "B" by adding a few drops of the water to the potassium iodide and iodine crystals in a glass beaker and after dissolving add the remainder of the 5 Cc. of water.

The two solutions—"A" and "B"—are then mixed together and allowed to stand for twenty-four hours to settle, after which the clear liquid may be poured off into amber glass bottles fitted with dropping stoppers.

A drop of Herzberg's stain applied to the paper pulp on a microscope slide brings out a wine-red color on cotton and linen fibres, gives a good clear blue color with bleached soda and sulphite wood pulps and a characteristic yellow or greenish gray yellow with ground or mechanical wood pulp.

The following method of preparing a sample of paper for the microscope is used by the Bureau of Standards, Washington, D.C.:

Several small pieces of paper of about the area of a cent are cut from different parts of the sheet of paper; these pieces are then placed in a beaker and covered with some ½ per cent. caustic soda solution, and the whole mass is then brought to a boil over a suitable heating device. After boiling for about a minute some tap water is added to wash out the caustic soda, followed by two or three drops of a 25 per cent. solution of hydrochloric acid to neutralize the alkali.

The slightly acid solution is then poured off and enough of the small pieces of paper are pinched off and rolled into a ball of about the size of a pea. This small ball of pulp should be well rolled between the thumb and finger and then placed in a test tube and the test tube half filled with water. The test tube is then shaken vigorously until the paper has been entirely broken up and the fibres are well separated. A small portion of the pulp is then carefully removed on the point of the microscope needle from the test tube and placed on each end of one of the microscope slides, the excess liquid being removed by a pointed strip of filter paper brought in contact with the edge of the drop.

The fibres forming the pulp are thoroughly dried and a drop of the Herzberg stain is added, then the fibres are well 'teased" out by the use of the microscope needles, a cover glass is placed over them and well pressed down, all the stain pressed out around the edges of the glass being removed with filter paper.

The slide is next placed under the microscope, and after studying the various fields an estimate of the proportion of each of the various kinds of fibres may be given.

One of the most frequently used solutions for staining fibres for microscopic examination is a solution of iodine in potassium iodide of the following compositon:

Iodne	Gm. 1.15
Glycerin	Gm. 1.
Potassium iodide	Gm. 2.
Water	Gm. 20.

In contact with this solution cotton, linen, bleached hemp and ramie fibres are colored brown; while mechanical wood pulp, jute and manila hemp are colored yellow or yellow brown. Chemical pulp of wood, straw and esparto are not affected.

A solution of calcium nitrate in iodo-potassium iodide is said to offer some advantages over chlorzinciodine solution. For one thing it does not absorb moisture from the air and it does not alter the fibres. It is made as follows:

Solution No. 1.

Nitrate of calcium crystals	Gm. 100
Distilled water	Gm. 50

Dissolve.

Solution No. 2.

Iodine	Gm. 1
Potassium iodide	Gm. 5
Distilled water	Gm. 90

Dissolve.

For use 3 Cc. of Solution No. 1 is added to Solution No. 2.

This solution stains linen fibre a rose color, with a brownish tinge; ground wood is colored yellow; bleached

sulphite fibre a delicate rose tint; unbleached sulphite fibre, clear yellow; soda popular fibre, indigo blue; straw fibre and esparto blue.

Several rough identity or diagnostic tests for the presence of ground wood in paper are employed by paper dealers, of which the following may be noted:

A solution of phloroglucin in alcohol is used for identifying mechanical or ground wood pulp, which turns a beautiful red color in contact with the reagent, the depth of tint, as compared with Schopper's standard color tables, corresponding to the amount of mechanical pulp, or lignified fibre, present. The procedure is as follows:

Into a flat porcelain dish pour two parts of a 2 per cent. alcoholic solution of phloroglucin and one part of hydrochloric acid (phloroglucin, Gm. 1; alcolhol, Cc. 50; hydrochloric acid, Cc. 25), and immerse in the solution the paper under examination. After ten minutes of contact compare the color developed with Schopper's standard color table.

In papers having a red or rose color the phloroglucin reaction breaks down and the employment of benzidine hydrochloride is recommended, this reagent giving rise to an orange color in the presence of mechanical wood pulp. The reagent is made by rubbing up 15 grains of chemically pure benzidine with 15 minims of hydrochloric acid and dissolving the benzidine hydrochloride formed in 2½ drachms of water at 122 deg. F. The solution is simply dabbed on the paper to be tested, and the orange color produced in the presence of mechanical wood pulp is the more intensive the more wood pulp is contained in the paper. The test is a very delicate one, the orange color being produced even when only traces of mechanical wood pulp are present.

Aliline sulphate stains lignified fibre yellow and a 10 per cent. solution of this salt, acidulated with sulphuric acid, imparts a golden yellow tint to paper containing ground wood, the color being more or less intense according to the proportion of ground wood pulp present. A solution of aniline chloride and hydrochloric acid is also used, but the results with each of these aniline solutions are inferior to those obtained with phloroglucin.

Wurster's reagent is popular in Germany as a diagnostic test for ground wood pulp, but as it, as well as phloroglucin and the aniline salts, develop their characteristic colors with any lignified fibre, the test is not conclusive of the presence of ground wood pulp alone. Wurster's reagent consists of a 50 per cent. solution of dimethylparaphenylenediamine in water. It gives a deep red color with ground wood pulp. There are now available test papers impregnated with Wurster's reagent which are called "di-paper" for convenience. Strips of this test paper are placed in a double sheet between the paper to be tested. After moistening the layers of paper with water the red color that develops is compared with a standard table of color values which is sold with the test papers.

It is the lignocelluloses, reacting to the foregoing reagents, which impart the greatest element of weakness and decay to paper. They are unsaturated compounds greedy of oxygen and profoundly affected by all oxidizing agents. Pure cellulose is a saturated compound which is resistant to the action of both chemicals and atmospheric changes, and this accounts for the practical indestructibility of rag papers, which are free from lignin and consist of nearly pure cellulose. Books and papers dating from the middle ages are to be found in museums and libraries to-day in a good state of preservation because they were made at a time when rags were the only crude material for the manufacture of paper.

NEW CYLINDER BOARD MACHINES IN FINLAND

Two new large cylinder board machines will shortly be erected in Finland. One of these giants is to be built for Enso Trasliperi Aktiebolag, Enso, and has a trimmed width of (approximately) 9 ft. 2 ins. (280 cm.), with a capacity of about 30 tons per twenty-four hours. It comprises eight cylinders of a diameter of (approximately) 42¼ ins. a Millspaugh suction roll of a diameter of (approximately) 23⅝ ins. (60 cm.), eight powerful head presses, couch press, three wet presses, thirty-two dying cylinders of a diameter of (approximately) 59 ins. (150 cm.), two cooling cylinders of a diameter of (approximately) 39⅜ ins. (100 cm.), a moist calender, two calenders, sheet-cutting apparatus, and reeling apparatus.

The other colossus was built to the order of A/B Stromsdalsbruk Juantehdas O/Y, Juankoski, and has a trimmed width of (approximately 6 ft . 18⅜ ins. (230 cm.), with a capacity of 20 tons per day. It comprises six cylinders of a diameter of (approximately) 49 ins. (125 cm.), a Millspaugh suction roll of a diameter of (approximately) 23⅝ ins. (60 cm.), eight head presses, couch press, three wet presses, twenty drying cylinders of a diameter of (approximately) 59 ins. (150 cm.), two cooling cylinders of a diameter of (approximately) 39⅜ ins., a moist calender, a calender, sheet-cutting apparatus, and reeling apparatus.

The orders for both machines, together with complete auxiliary machines, were placed with the Marmbrunn engineering firm of H. Fullner.

BAMBOO PAPER.

Mr. W. Raitt, F. C. S., Cellulose Expert, at the Forest Research Institute, Dehra Dun, in a report on the use of bamboo fibre for the manufacture of paper, makes the following interesting statements.

Selecting Rangoon as a promising site for a pulp factory, Mr. Raitt arrives at an estimated cost per ton of unbleached pulp as under:—

	Rs.	a.	p.
Bamboo	27	8	0
Chemicals	29	14	0
Fuel	17	4	0
Labor and superintendence	7	0	0
Depreciation and repairs	6	5	0
Royalty	1	0	0
Insurance, taxes, stores and sundries	3	9	0
	Rs. 92	8	0,

or say £6-3-4 per ton of 2,240 lbs.

Should it be necessary to produce a bleached pulp, the cost will be for a fully bleached article, Rs. 125 per ton, inclusive of the loss in weight caused by bleaching.

New calendar stacks of the Imperial Paper Mills Company, Limited, in Grovesend, near London, are most noteworthy. They have a weight of almost 55,000 kilograms, or sixty tons, and a cylinder width of from 3,100 to 3,500 m.m., or about eleven feet. These huge calender machines were built by the well-known firm of H. Fullner, in Warmbrunn, Schlesien, which also furnished in the past year three similar calenders for the above mentioned paper mill. This repeated ordering is a compliment to the construction and work of the Fullner shops and a noteworthy advance for the firm in their specialization in building calenders.

NEW PATENTS

All patents are specially compiled for the PULP & PAPER MAGAZINE. Those of United States are by Davis & Davis, Patent Attorneys, Washington, D.C. Full particulars with drawings may be had by addressing the Commissioner of Patents, Washington, D.C., enclosing five cents per patent. Canadian patent particulars may be obtained from the Patent Office, Ottawa. In all cases give number of patent. We also carry brief descriptions of important English, French and German patents

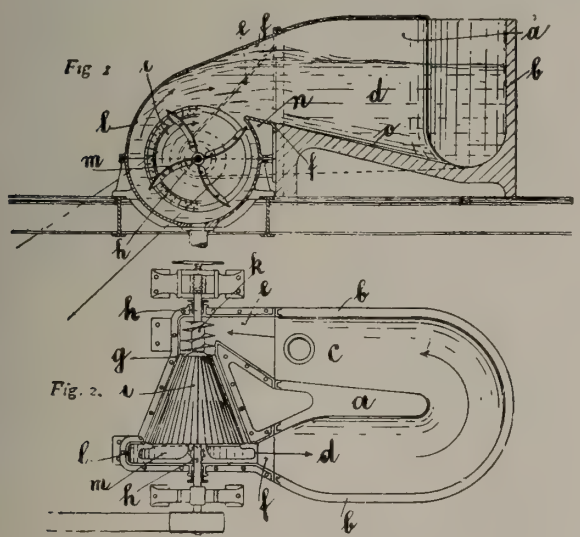
A CYLINDRICAL PAPER-MILL WITH A HORIZONTAL CONDUIT, WHERE THE FLOWING MATERIAL MOVES THROUGH THE GRINDER IN THE SAME DIRECTION AS THE ROTATING AXLE OF THE ROLLER.

(Specially Translated for Pulp and Paper Magazine.)

Axel Hisinger, in Jyrashyla, Find.

Patented in Germany, No. 256054.

A cylindrical paper mill with a horizontal conduit, where the flowing material moves through the grinder in the same direction in which the axle of the roller moves, is hereby characterized that on the one narrow side of the mill-trough (b) a conical-shaped mill (g, i) is built in, so that the one trough-canal (c) leads out from the narrow end, and the other with coupling (n) flows from the wide end of the hopper (g), and on the roller (i) at the narrow end of the hopper (g) is a screw conveying appliance (k) and at the wide end of the



hopper (l) a wheel is attached to draw off the material.

The said trough (b) with a partition wall (a) has its one side closed with a semi-circular end; as the other side the trough canals (c, d) are open and end in funnel-shaped nozzles (e, f), which lead diagonally into the machine in front of the trough (b).

The nozzel (e) of the channel (c) leads into the nardow end of the hopper (g). Here on the axle (h) of the cylinder is a screw conveyer (k), which forces the material from the nozzel (e) between the knives of the cylinder (i) and the sides of the hopper (g), and thus provide more speedy grinding. At the large end of the cylinder (i) the ground material is conveyed from the hopper (l) by a rotating centrifugal wheel (m), which is attached to the cylinder (i) over the joint (n) into the canal (d). The flow (o) of the canal (d) has large descent to assist in the conveyance of the material.

Hence, because the material passes through the knife cylinder on the one side under pressure, while on the other side the stuff is drawn off the cylinder attains a high rate of speed.

The working capacity of this new mill is consequently very great, so much the more because a large rolling surface is utilized. In the new mill the material can be ground up to a very fine degree, so saving the installing of a mill of finer grade.

The arrangement of the grinding apparatus, the knives, and the other equipments, and the power are all similar to the other mills on the market. There is a difference, however, which is more advantageous the hopper of the chopping cylinder is more blunt, while the material is first chopped up and then made very fine.

The upper part of the knife and centrifugal-wheel casing can be easily removed, and the enclosed machinery can easily be looked after and changed. The gradual narrowing of the grinders can be done automatically. Thus the mill requires no special attention.

SULFITE-WASTE EXPLOSIVE.

Fritz Raschig, of Ludwigshafen-on-the-Rhine, Germany.

U. S. Patent, No. 1,056,366. March 18, 1913.

This invention relates to explosives, and it comprises an explosive containing as essential ingredients an oxidizing agent such as sodium, potassium or ammonium nitrate, and sulfite waste constituents.

MACHINE FOR MAKING FOLDED PAPER CUPS.

Sven J. Conrad Luttropp, of Attleboro, Massachusetts.

U. S. Patent, No. 1,056,564. March 18, 1913.

Sanitary cups for individual use are made in various forms of paper; some are pressed or molded into the usual cup shape, and others are folded to a flat form prior to use, with overlapping portions secured by an adhesive. Some objections are raised to both. The molded or pressed cups are more bulky than the flat, folded ones, while the latter require the use of an adhesive, or else have interfolded portions that require abrupt bends, which are liable to crack and leak.

The object of the present invention is to provide a machine that will rapidly convert flat water-proof paper, preferably thin and quite flexible, into flat cups, the articles being made and completed ready for use purely by folding and without the use of an adhesive, and with no portions that require much bending out for use.

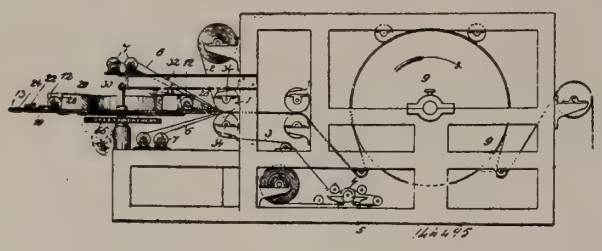
CANADIAN PATENT NO. 144,495.

Herman Gueffroy, Berlin, Patentee.

Claim.—In a machine for the production of a fabric having an enclosure of crossing wires between the covering webs, in combination two horizontal discs, means to rotate the discs at the same speed in opposite directions, spools for holding wire on one of said discs at a uniform circumferential distance from each other. a corresponding number of grippers for grasping the

No. 144,495. Machine for Making Fabric Paper.
Machine à fabriquer du papier tissu.

Fig.1



wires unwound from said spools on the other of the discs.. In a machine for the production of fabric, two discs, means to rotate the discs at the same speed in opposite directions, spools for holding wire on one of said discs, a lever pivotally secured to the disc, a roller carried by the lever and a nozzle at the edge of the disc, grippers, each of which is open when opposite to a nozzle of the other disc, on the other of said discs, adapted to allow the wire projecting out of said nozzle to enter said gripper, whereupon the gripper is closed and grasp the wire.

MACHINE FOR MAKING CYLINDERS OF CARDBOARD AND THE LIKE.

Patented by E. C. Lovell, Bristol, Eng.

U. S. Patent, No. 1,056,191. March 18, 1913.

The machine provides for the manufacture of all kinds of cardboard tubes and cylinders.

CANADIAN PATENT NO. 145,067.

Samuel Milne, Edinburgh, Scotland, Patentee.

A paper making machine in which the paper is taken from the wire by means of a felt, a couch roll, and endless wire passing around such roll, a roller adjacent to the couch roll and an endless felt, the felt lapping partly around the couch roll and around the roller, and the roller being arranged at such a point that the felt lies against the return portion of the wire and the web of paper leaves the wire after it has passed the couch roll, the roller presenting a large area for air to pass through the wire before the paper leaves it and the paper leaving the wire with the top face next the felt.

BEATER AND WASHER ENGINES.

Herbert R. Simonds, of Dayton, Ohio.

Patent No. 1,056,461. March 18, 1913.

The invention relates to improvements in the construction of the roll of a beater and washing engine and particularly to the arrangement for securing corrugated fly bars in the roll.

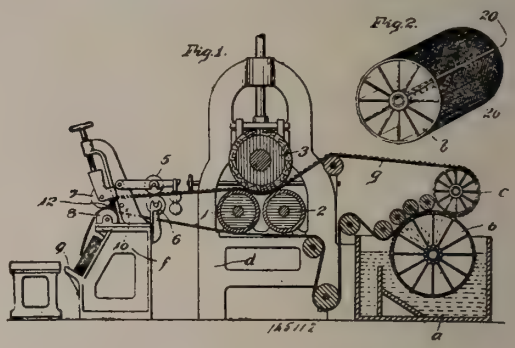
CANADIAN PATENT NO. 145,112.

The Sherbrooke Machinery Company, Limited, Sherbrooke, Patentees.

The combination of pulp squeezing rolls driven at a predetermined rate, a set of sheeting rolls driven at a relatively higher rate and through which the pulp passes from the squeezing rolls.

In a wet machine, of a vat, a pulp cylinder revolubly mounted therein, means carried by the cylinder to form

No. 145,112. Manufacture of Pulp and Paper.
Fabrication de pulp et de papier.



weakened lines across the web of pulp at intervals, a set of squeeze rolls through which said web passes, and tension means to break the pulp along the weakened lines.

In combination with means for forming a web of pulp paper or the like, having transverse line of weakness formed therein during the process of manufacture, a set of squeeze rolls, and an endless apron for carrying said web, of a pair of sheeting rolls having a relatively fast rate of rotation, means for deflecting said web from said apron and causing it to pass between said sheeting rolls, means for limiting the point on said web to which the effect of said sheeting rolls extends, and a hopper to receive sheets as they come from said sheeting rolls.

CHARACTERISTICS OF GROUND WOOD PULP.

Professor Kirchner narrates the following characteristics of "fine ground pulp" in his lately printed work, "Ground Wood Pulp Industry," as follows: "The single cells in good fine ground pulp are seldom longer than one-twelfth inch; the average length is one twenty-fourth inch; splinters should not occur. Twin and triple fibres should only seldom occur, and never with more than one hundred and twenty-fifth inch width. Parts of cells below one-twentyth inch long must constitute most of the pulp, and the very finely ground (dead ground) cell particles must not be altogether missing. The last named fine particles act as fillers and are indispensable when a uniform thickness and a good look through are required."

PULP AND PAPER NEWS

Davy Pulp and Paper Company, Limited, have incorporated with a capital of fifty thousand dollars. The head office of the company is to be in Thorold, Ont., and the provisional directors of the company are G. H. Sedgewick, A. G. Ross and E. V. Macmillan.

The Windsor Publishing Co., Ltd., incorporated; capital $100,000. Windsor, Ont. Publishers of newspapers.

The Laurentide Company, Ltd., is establishing a New York office to care for its paper business in the United States. Mr. J. F. Patton will be in charge.

Nadeau Lumber Co., Ltd., incorporated, Montreal. Capital, $25,000. To manufacture pulp, lumber, etc.

The continued prosperity of the Laurentide Company, Ltd., Grand Mere, Canada, is shown in the declaration of the regular quarterly dividend of 2 per cent. The disbursement will be made on April 1st to stockholders of record on March 22nd

In the Ontario Legislature a vigorous attack was made by T. R. Atkinson, M.P.P., on the forestry policy of the Ontario Government. He said that there were hundreds of places in Ontario, chiefly the rocky slopes of New Ontario, where the Government might better begin their reforestation projects in preference to that carried on in a number of older settled counties.

Mr. Allan McPherson, the well-known lumberman, of Longford Mills, Ont., near Orillia, was shot on March 24th by a would-be Italian burglar, who escaped. His recovery is now expected. Mr. McPherson is heavily interested in the Spanish River Pulp and Paper Mills, Limited.

Bogue Bros. and Henry have incorporated in Montreal; capital $50,000. Head office, Montreal. To manufacture and sell cardboard, paper, wood pulp and all paper materials. To carry on business as manufacturing concern.

The Abitibi Pulp and Paper Company let contracts last week for the construction of the various buildings at Iroquois Falls and also for part of the machinery which is to go into the plant. The company already has a sawmill in operation, cutting up lumber which will be used in the construction of their mills. These are now being pushed to completion as rapidly as possible.

Preparations are being made to put the roof on the part of the mill destroyed by fire at the Riordon Paper Mills at Merriton.

Men are digging for the foundation of the new mill to be put in the Riordan Field.

Shipshaw Power Co., Ltd., Quebec, incorporated, capital $100,000 W. Price, merchant, and others. To assume control of the subsidary power for the new Kenogami Paper Mills.

The Waterous Engine Works has under consideration the erection of a large addition to its plant this year. A building 200 to 250 feet will be added to the present plant, which will mean the addition of a considerable number of men.

The discovery in Egypt of a number of large rolls of papyri was recently made by Robert de Rustafjaell. The rolls were unearthed while digging near the Temple of the Ptolemies in Upper Egypt, and are said to be of the Graeco-Egyptian period.

There are seventeen of them, all about twelve inches wide. The largest will probably be found to be about fifty feet long, and, if this estimate is correct, it will be the record length for a roll of papyries.

Clarke Bros., the well-known lumber firm of Bear River, Nova Scotia, propose to build a small sulphite mill. Local and outside capital are interested as well. The location is an excellent one, on tide water, with good shipping facilities. The limits are also all freehold, which gives the new venture a decided advantage in the American market.

The sheet which came over the machine of the Dryden Timber and Power Co. last week shows up well. They are now running on full capacity in the paper mill, as well as the pulp mill. Their output will chiefly be confined to building paper for the present.

A number of the directors witnessed the opening. F. Perry of Montreal H. B. Shaw, Union Bank Winnipeg and Sam Nesbitt M. P. P. H. T. Bonfield brother of the manager has returned to United States.

Firstbrook Bros., Limited, of Toronto, box manufacturers, have secured the controlling interest in the Grenville Board and Pulp Company at Thorold. It has been rumored that the industry would remove to Penetanguishene, Ontario. The report is not correct, as the plant at Thorold will be retained for experimental purposes, while a new plant will be erected by the Firstbrooks at Penetanguishene, where the concern has a large box plant, from which there is considerable waste. It is expected that this can be worked up profitably in wall, board and other lines which the Greenville company have been successfully putting on the market for some time past.

The Hinde Dauch Paper Company, of Toronto, will install a new board machine. The contract has been awarded to the Downingtown Manufacturing Company, of East Downingtown, Pa., for a 124-inch, four-cylinder machine, equipped with three sets of presses, and one Millspaugh suction press and fifty 48-inch dryers and two stacks of calenders. The machine will be driven by a variable speed motor.

Mr. J. W. White, engineering salesman for The Jeffrey Manufacturing Co., has transferred his office from Athens, Ohio, to Duluth, Minn.

Davies Paper Box Company, Limited, incorporated as a Limited company, with a capital of forty thousand dollars. The head offices of the company is in Vancouver.

The Chief Forester of British Columbia states that a total of 60,000 acres of pulp timber has been applied for by coast pulp companies this year. Some of this has been logged over, and some of it examined for sale. The remainder will be cruised to determine whether or not it should be held. The valley of the Kitimat will be examined for purposes of separation of agricultural from non-agricultural land.

The province of British Columbia has been organized into eleven forest districts, each in charge of a district forester who will control all timber inspection, revenue collection, fire protection, establishment of permanent improvements and the supervision, under the general direction of the head office, of any cruising and reconnais-

sance work which may be carried on in his district. The vesting of permanent responsibility in local centres will free the head office of many small cares and will develop efficiency and satisfaction in administration of local affairs.

The recent floods in the Miami valley have destroyed the Breckett Co.'s paper mill, valued at $300,000, and the Champion Coated Paper Mills, incorporated at $7,500,000. This latter mill is the second largest coating mill in the world.

The Spanish River Pulp and Paper Mills, Limited, has declared a quarterly dividend at the rate of 7 per cent. per annum on the preferred stock for the quarter ending March 31st, 1913, payable on April 15th, 1913, to holders of record on the books of the company at the close of business on March 31st, 1913.

Estimates made by forestry engineers show that the Abitibi Pulp and Paper Company will be able to manufacture their pulp at the mill at Iroquois Falls at a cost of $9.00 per ton. When overhead charges, freight, duties, etc., are added to this, it will bring the cost of a ton of pulp laid down in the United States to $16.67. If these figures hold the company can show a very handsome profit.

SINDALL AND BACON.

The Pulp and Paper Magazine takes pleasure in announcing that Messrs. Sindall and Bacon, the famous pulp and paper chemists of London, have agreed to give our readers a series of articles on "Pulp and Paper Under the Microscope." We aim to fill our columns with the best material the scientific and practical world affords, and assure our readers that no expense will be spared to make this magazine the premier journal in the field.

PAPER TECHNOLOGY.

The second edition by R. W. Sindall, F.C.S., the famous London paper expert, is of great value to pulp and paper men. The work comprises a manual on the manufacture, physical qualities and chemical constituents of paper and paper-making fibres. All grades of pulp and paper are thoroughly dealt with. All interested in these subjects should have a copy. Price $3.50, post-paid. Charles Griffin & Co., Ltd., Exeter St., Strand, London, England.

BEWARE OF GOOD-LOOKING CONCRETE FLOORS.

"The prettiest concrete floor is not the best wearing." A nice appearance is given to a concrete floor by the small particles of sand and pebbles, but these break down. For long service the best floor is the one made with the coarse material near the top. After a while this floor wears down to the coarse material and then looks like a terraze floor. It is quality rather than the high polish that counts in concrete floors, and it is a pity more manufacturers do not realize this. It is very hard to get a good wearing finish and a good-looking finish at the same time.

KRAFT WRAPPINGS POPULAR.

There is no question that Kraft paper is becoming very popular with the small merchant as well as the big. One reason is that Kraft makes a neat package. So far as imitation Kraft is concerned, little of this is handled, as dealers either want the real or else will continue to buy the heavy wrappings. Up to about seven months ago nearly all the wrappings sold were heavy, but it is noted that the sales of the lighter have increased at a remarkable rate ,and the increase will continue. There are several instances where small merchants, who had always purchased heavy wrappings are now using Kraft and other lighter makes.

ENGLISH PUBLISHERS CONSUME PAPER.

No less than 12,886 publications were issued in England during the year 1912. Ten thousand four hundred and seventy-seven of these were new books, the subsequent balance being second editions or reprints. Novels took first place, their total being 2,290. Theology, strange to say, comes second, with 934, while children's books numbered 821, and biography and litearry history 606. Altogether 1912 was a full book year. Publishers generally were very well satisfied.

ASPHALT AND MASTIC FLOORS.

Leonard C. Wason, president of the Aberthaw Construction Company, of Boston, in speaking recently of asphalt and mastic floors, stated that an asphalt floor will give satisfactory service under wet, hard conditions if the material is properly selected and the work intelligently done. It is very well to make sure that the people laying such a floor are thoroughly competent, and that they are paid on such a basis that they can give really first-class work.

WHO'S WHO IN 1913.

The 1913 edition has just reached our office and is as valuable as ever. Numerous paper and pulp men are mentioned, together with their biographies. It is a book, invaluable in the office and counting room as a directory and for all departments in connection with the sales or publicity of manufacturing houses. The book is most comprehensive and covers its field in an admirable manner and should be of timely interest to paper men. Price $4.00.—The Macmillan Company of Canada, Ltd., 70 Bond street, Toronto.

F. H. Anson is famous for his ability to choose for his lieutenants men exactly suited for the positions they occupy. In this connection speaking to a friend the other day he said:

"You know in any emergency, my men know just what to do. They don't have to wait for orders like a certain stationmaster I once heard of.

This man was in charge of a small station on a hill railway in India. He had been given strict orders not to do anything out of the ordinary without authority from the superintendent. This accounts for his sending the following telegram:

"Superintendent's Office, Calcutta: Tiger on platform eating railway porter. Please wire instructions."

Financial Times.

THE MARKETS

TORONTO MARKETS.

Toronto, April 1st, 1913.

The markets during the last two weeks have been remarkably quiet, in almost every line. Paper stock of all kinds has been quiet and little buying with no change in price. There is a great scarcity, however, and it is expected when the mills increase production the prices will advance.

Ground wood remains firm with little business being done.

Sulphite continues high and promises to remain steady in spite of the fact that the flood has destroyed the Champion mills, which will put a hundred tons of bleached stock on the market. The demand is so brisk that no change is anticipated due to this coming on.

Pulp wood continues scarce and promises to be even scarcer than at first anticipted. The prices will no doubt rule very high during the coming season.

News print remains firm in spite of the slight cutting of one of the Canadian mills during the past week.

Wrappings and bags are still low.

The following are the Toronto quotations, f.o.b. Toronto:

Paper.

News (rolls) $43 to $45, according to quantity.
News (sheet) $45 to $50, according to quantity.
Book papers (carload) No. 3 4.10 to 4.50c
Book paper (broken lots) No. 3, 4¼c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2 5c to 5½c.
Book papers (carload) No. 1, 5c. to 6¼c.
Book papers (broken lots) No. 1 5½c to 6¾c.
Writings 4½c. to 7½c.
Bonds, 10c. to 18c.
Sulphite Bond, 6½c. to 8½c.
Fibre, 3c to 4c.
Manila, B., 2½c to 3c.
Manila No. 2 2.85c to 3.50c.
Manila, No 1 3c to 4c.
Kraft, 4c. to 4¾c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $48 to $49, delivered in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.60.
Mixed shavings, 55c.
White blanks, 85c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 85c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.15.
No. 1 print manillas, 60c.
Folded news, 47½c.
Over issues, 55c.
No. 1 clean mixed paper, 42½c to 45c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.75.
Ordinary satinets, 87½c.
Floc. satinets, 97½c.

MONTREAL MARKETS.

Montreal, March 31, 1913.

Prices in all lines of pulp and paper remain steady. One paper mill, it is said, made a slight cut in quotations to an American publishing house a few days ago, but all other mills are keeping prices up to the old levels, and speak optimistically about the future demand and prices. One manufacturer pointed out that the cost of paper must necessarily tend in an upward direction because the cost of fibre is now from $6 to $7 a ton more than it was a year ago. While ground wood shows no immediate improvement, the conditions underlying this commodity, are showing some improvement. It is said that it will be scarce by mid-summer.

A factor which up to the present time has practically escaped the notice of pulp men is now being forced to their attention, viz., the probable scarcity of pulpwood. The past winter has been an extremely unfavorable one for the getting out of all kinds of forest products. This is especially true of the district south of the St. Lawrence, where the winter was extremely mild, and cutting operations of both pulp wood and timber were reduced by at least 50 per cent. This curtailment in the cut pulp wood is bound to effect the American mills, which depended largely upon Canadian pulp wood. Reports also state that a corresponding scarcity exists in the Adirondacks and throughout the State of Maine. Altogether, the pulp wood available for the coming summer is going to be much less than usual, and consequently will effect the price of ground wood and other commodities.

The following are the prices for paper, pulp and paper stock, f.o.b. Montreal:

Paper.

News, $41 to $43, delivered in United States.
News, $41 to $42 for large orders, $44 to $45 for small orders.
Newsprint, sheet, $46 to $50 at mill.
Book papers, carload lots, No. 3, 4½c. to 4¾c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3c. to 3½c.
Broken lots, No. 2, 5¼c. to 5½c.
Carload lots, No. 1, 5½c. to 6¼c.
Broken lots, No. 1, 6¼c. to 6¾c.

Wrappings.

Fibre, 3¾c. to 4c.
No. 2 manilla, 3½c. to 3¾c.
No. 1 manilla, 3½c. to 4¼c.
Kraft, 4¼c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.80 to $1.85.
No. 1 soft white shavings, $1.65 to $1.75.
No. 2 soft white shavings, $1.15.
Mixed shavings, 55c. to 60c.
White blanks, 90c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c. to 55c.
Manila envelope cuttings, $1.05 to $1.10.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 50c.
Crushed news, 45c.

Crushed news—
Good mixed paper, 40c. to 42½c.
Old white cotton, $2.60 to $2.75.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.

Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.45 to $3.55.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.55 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.60 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.50.
New light flannelettes, $3.75 to $4.25.
Flock satinents roofing stock, $1.00.

NEW YORK MARKETS.

(Special to Pulp and Paper Magazine.)

New York, March 29, 1913.

The chemical pulp situation in New York and vicinity remains relatively the same as last reported. Prices are being firmly maintained by both foreign and domestic makers, and in some instances, especially in imported sulphites, packers are asking even higher levels than they were at the beginning of the month. American consumers, however, are not buying as freely as they have been, and movement during the past two weeks has been confined chiefly to withdrawals on outstanding contracts. Reports from abroad show that the chemical pulp situation is more than satisfactory, and the better known brands are practically sold out over this and part of next year. This appears to be quite true, as comparatively few offerings are now being made from abroad, and reports at hand show that consumers are pretty well supplied for their wants for some time to come. The importations at this port during the month of March have been quite heavy, but all arrivals have passed immediately into consuming channels, and there is comparatively little, if any, stocks on the docks here at present.

During the past two weeks water has been plentiful in the streams and rivers in the east, and mills making ground wood pulp have had little trouble in keeping their machines running to an almost capacity basis. They have therefore been fortunate in being able to lay up a little surplus stocks to tide them over during the spring floods, which are now beginning to fill the rivers to such a height that in many cases machines have been greatly curtailed in their productions. Mills making pulp for sale only have heavy supplies on hand. Movement among them is slow and uninteresting, and reflects extreme competition whenever a customer enters the market. Prices are purely nominal and subject to shading for new business. Trading at present is confined almost entirely to contract movement.

Old paper stocks are enjoying an active demand, and almost every description of waste paper is contracted for before it is packed. Prices are being firmly maintained and local packers are being pushed for shipments. Shavings, ledger, book and magazine stocks are the chief factors in the market, though the lower grades are moving almost as freely. No. 1 colored shavings are advancing and cannot be had to-day for less than 90c. Solid ledger stocks advanced five points during the past ten days, and is quoted now at $1.85. Ledger stocks also are stiffening and are unobtainable for less than $1.60.

Nearly all descriptions of rag stocks are also in active inquiry, and supplies in local hands are only sufficient to meet the prevailing demand. Roofing stocks are very strong in both price and demand, and values during the past two weeks have stiffened slightly. Thirds and blues and blue cottons are the chief factors of the market. No. 1 whites are easing off slightly owing to the heavy collections. Foreign rag stocks are arriving in heavy volume, but are passing immediately into contract channels. Mills are not buying these grades as freely as heretofore, and it is thought locally that this tendency, together with the fair supply of domestic stocks on hand will shortly result in a general lowering of prices.

Pulp.

Ground wood, No. 1, $16 per short ton, f.o.b., mill.
Ground, wood, No. 2, $14 per short ton, f.o.b, mill.
Unbleached sulphite, domestic, $2.15 to $2.30, delivered.
Unbleached sulphite, imported, $2.05 to $2.30, ex dock, New York.
Bleached sulphite, domestic, $3 to $3.15, delivered.
Bleached sulphite, imported, $3 to $3.25, ex dock, New York.
Bleached sulphate, imported, $2.60 to $3, ex dock, New York.
Bleached soda pulp, domestic, $2.20 to $2.35, delivered.
Kraft pulp, imported, $2 to $2.20, ex dock, New York.

Paper.

The demand for all grades of paper in the east is gradually beginning to pick up and show some signs of renewed life. For some time past the situation has reflected a quiet tone. Consumers appeared to be holding off and only taking on such supplies as are actually needed. This was expected to a certain extent on account of the change of administration at Washington. It was the general feeling that shortly after the fourth of March, when President Wilson took the chair, that business would resume with a rush. However, this was not forthcoming, and towards the middle of the month many men prominent in the industry expressed themselves freely in the belief that the paper industry was doomed for a bad year. However, trading began to pick up after the middle of the month, and judging from the present outlook, conditions are much better, and the outlook much brighter for the future, than it has been for some months past. The big newspapers and periodicals are drawing freely on their contracts and many have sought additional supplies. New contracts are reported daily, and the news market reflects a somewhat stronger tone than it did at the beginning of the month. Side runs, too, reflect a strong tendency, but the supply on hand is limited and mills are somewhat behind in their orders. Kraft papers are moving freely, and mills continue to keep their machines running to capacity, many of them being from two to five weeks behind in their orders. Manilas are improving in demand, and the prevailing inquiry reflects a normal to good volume. Orders, however, are still small, indicating a hand-to-mouth buying. Fibre papers are also on the improve, the supply being normal. No. 1 white tissues are being firmly maintained at 42½c under the influences of a steady inquiry. Manila tissues are also reported firm, but there are still a few makers who are willing to sacrifice prices in order to obtain business. Toilets are very strong. The board business continues to reflect a steady volume of orders. Eastern mills are in many cases taxed in filling their orders, and supplies are not over heavy. Prices are therefore being firmly maintained. Current quotations on the various grades of paper, as reported in this city to-day are given herewith:

News, rolls, transient business, $2 to $2.10, f.o.b.,, mill.
News, rolls, contract renewals, $2 to $2.05, f.o.b., mill.
News, sheet, $2.15 to $2.25, f.o.b., mill.
Book papers, car lots, C. & S. C., $4 to $4.20, f.o.b., mill.
Book papers, car lots, M.F.S.., $3.75 to $3.90, f.o.b., mill.
Paper, superfine, 11c to 13c, delivered east of the Mississippi River.
Paper, extra fine, Lo ½c, delivered east of Mississippi River,
Paper, No. 1 fine, 9c, delivered east of Mississippi River.
Paper, No. 2 fine, 8c, delivered east of the Mississippi River.
Engine sized, 4¾c to 8c, delivered east of Mississippi River.
Bond paper, 6c to 24c, delivered east of Mississippi River.
Linen paper, 7c to 18c, delivered east of the Mississippi River.
Ledger paper, 8c to 30c, delivered east of the Mississippi River.
Manila, jute, 4¼c to 5c, delivered.
Manila, wood, $2.40 to $2.80, delivered.
Kraft, No. 1, $3.65 to $4, f.o.b., mill.
Kraft, No. 2, $3.10 to $3.82½, f.o.b., mill.
Screenings, $1.75 to $2.25, delivered.
Boxboards, news, $30 to $32 per ton, delivered.

Boxboards, chip, $30 to $32 per ton, delivered.
Boxboards, straw, $32 per ton, delivered.
Wood pulp board, $42.50 to $45 per ton, delivered.
Tissue, white, cylinder, 40c to 42½c, delivered.
Tissue, white, fourdrinier, 45c to 50c, delivered.
Tissue, jute manila, 50c to 55c, delivered.

M. E. B.

THE BRITISH MARKETS.

(Special to Pulp and Paper Magazine.)

London, March 24, 1913.

The British paper trade has had a very successful run of business during February, and the exports for the month reached £310,900, compared with £296,432 for the same month in 1912, and £260,533 in 1911. Writings were exported to Canada to the extent of £1,329 (an increase of £760 over the corresponding month in 1912), and printings to the extent of £16,005 (an increase of £9,400 over the same month in 1912). Australia imported the largest quantity of printing paper during February from the British mills; next comes India, and Canada is third on the list. The imports for the same month total £618,-067, compared with £496,946 for February, 1912 and £473,938 in February, 1911. Printings or writings on reels from Newfoundland reached £28,280 (an increase of £22,000 over February in 1912), whilst printings or writings not on reels were received from the United States of the value of £7,649 (compared with £5,493 during February, 1912). The export figures bear out the market reports appearing in the Pulp and Paper Magazine, viz., that. 1, British paper industry is enjoying a remarkably good spell of prosperity, there being plenty of orders to keep the mills going at full capacity and, naturally, an increased demand for paper-making materials. Some of the mill-owners have already met privately, with a view to further increasing the prices charged for papers of all grades and qualities, and these are now being asked when ever opportunity presents itself.

* * * *

The mechanical pulp market is fairly active, and prices low —prime, 50 per cent. moist, prompt, being $9.60 to $10, and forward about half a dollar more; fine, dry, $20.60 to $20.66 for prompt and forward $20.66 to $24. To-day it was said that in Norway sellers could not get $9 a ton, and contracts to cover 1914 had been entered into. The Americans are already in the markets in Europe for contracts, and their appearance will cause a change in prices. It is also said in London that in Germany things are slow in pulp matters, money being scarce and the banks changing 7 per cent. to 8 per cent. on short period loans. All these things tend to affect business and, meantime, the British paper-maker is taking matters easy and receiving deliveries on contract. The total quantity of mechancial imported into the British market during February reached £81,658, compared with £64,106 in FeFbruary, 1912, and £48,310 in February, 1911. Of these totals Canada sent £943 worth, a decrease of £4,676 compared with February last year and an increase of £693 over February, 1911. Norway was the largest exporter, Sweden next, and then Canada. Mechanical dry was imported during February to the extent of £4,229, compared with £4,563 in February, 1912. The other imports during February were: Chemical wood pulp, wet, £2,754 (an increase on the past two years), and chemical, dry, £169,081 (an increase on the past two years).

* * * *

Sulphites and sulphates are gradually rising in prices and business is very slow. Sulphite, easy bleached, stands at present at $47 to $48; sulphite, strong, $45 to $47; soda, unbleached, $45 to $45.50; soda, unbleached, strong, about half a dollar less than soda unbleached. There is no disposition on the part of sellers to accept lower prices, and business is consequently restricted. Continental and Scandinavian reports that reach London—and they may be taken as accurate—show that the available quantity of chemical for prompt or forward delivery is very limited and mills are not disposed to discuss business with a view to covering 1914 requirements. Any buyer who succeeds in concluding forward negotiations may congratulate himself on the result, as he will not regret it later on. Sulphite is moving at $47 and the supply is gradually becoming smaller.

* * * *

The chemical trade is still very active, and the demand for bleaching powder, caustic soda, rosin and soda crystals is good. Prices are unchanged and the markets firm. Since the beginning of the new year there has been a great call on sizing materials and glue has been advanced to $9.60 for the best qaulity. Rosin is also a shade dearer, but the rise and fall occasionally in American rosin here materially affects the markets from a paper-maker's point of view and helps to keep home prices more or less stationery on the whole.

* * * *

The demand for china clay is still good and the supply limited. Prices are $9 to $9.50 in 5 cwt. casks. The comments that have recently appeared in the Pulp and Paper Magazine regarding the decreasing supply of china clay from England is borne out by Government figures which show that in February last the export tonnage was only 42,362 tons, compared with 49,769 in February, 1912. The decrease was certainly not caused by bad weather and strikes, but the returns show that the demand considerably exceeds the supply, and Canada should give this class of mineral every consideration, with a view to feeding the States' markets which England cannot cope with.

* * * *

Rags and other paper stock are maintaining a good trade, but the supplies are limited and prices are still higher and higher. In February 2,695 tons of rags were exported from British ports, only an increase of 400 tons over February in 1912, and the bulk of the trade went to the United States. Esparto is also in good request, and prices are weakening. During February 25,328 tons of esparto reached English ports from Spain and Algeria, etc., 3,000 odd tons over February in 1912.

* * * *

In the British markets complaints are general against the high prices of coal and the cost of raw materials, other than mechanical, used for paper-making. These are materially increasing the cost of production and supplies of chemical pulps from Canada, if they could be managed, would be gladly welcomed by consumers.

ABROAD.

(Special to Pulp and Paper Magazine.)

New York, March 29, 1913.

In discussing the chemical pulp situation in Europe, a well-known correspondent states that business is very quiet, but firm. "It is also stated," he says, "in the trade organs of Gothenburg and Christiania that sulphites are again showing a marked tendency to rise in price, in consequence of the numerous inquiries, a number of which will certainly not be satisfied. If the figures presented to the members of the representative Chambers of Commerce are anything like accurate, the available unsold for 1913 is very limited, indeed, and there have been many proofs that the pulp mills are not disposed to sell what they have remaining of 1914 output, except on a substantial increase on present prices. Both in Sweden, Finland and Norway the opinion appears to be very deeply rooted that 1914 will see a further rise in the price of cellulose; and this view is strengthened by the fact that there are at the present time in the market genuine inquiries for next year and 1915. Paper-makers in Europe seem slowly to have come around to the opinion that those who cannot secure themselves at an early date for next year and the year after will run a big

risk of being "left"; and there is no doubt that the shrewdest of British paper-makers are already covered from this time until the end of 1915, and in some cases even 1916. Sulphite is also in better demand, and it is reported that $43.88 is being paid for good sulphite, c.i.f., British ports, and that it is becoming difficult to place orders for any considerable quantity of sulphite of reputable make. One Scandinavian correspondent says that sales of strong sulphite for several years forward have been closed at prices equal to Kr 150 (long ton, $40.20, and short ton, $36.78) to Kr. 151 (long ton, $40.47 and short ton, $36.12), f.o.b., Baltic ports. There appears to be so little sulphate and sulphite on offer that the amount of business actually done does not really represent much as indicating the market, although it is probably true that the contract already referred to has been made for strong sulphite at what may be considered a good price. A well-known dealer has recently supplied us with the following prices as being the available current quotations:—

Prices, c.i.f., London or Manchester—

	£.	s.	d.		£.	s.	d.
(a) Sulphite, bleached	12	0	0	to	12	15	0
(b) Sulphite, easy bleaching, 1st quality	9	0	0		9	5	0
(c) Sulphite, "news" or strong quality.	9	7	6		8	10	6
(d) Soad, unbleached, 1st quality	8	5	0		8	12	6
(e) Soda, unbleached, strong	8	0	0		8	5	0
(f) Soda, kraft	7	10	0		8	2	6

	Long Ton.		Short Ton.	
(a)	$58.50 to	$62.16.	$52.35 to	$55.94
(b)	43.88	45.09	39.19	40.59
(c)	40.83	41.56	36.44	37.40
(d)	40.22	42.05	35.90	37.84
(e)	39.00	40.22	34.80	35.90
(f)	36.56	39.50	32.61	35.40

M. E. B.

PAPER-MAKERS' CHEMICALS.

New York, N.Y., March 29, 1913.

All descriptions of paper-makers' chemicals are passing freely into consuming chemicals, and the combined movement, both on contracts and in new business reflects an activity in proportion to the requirements of this period of the year. The assigning last week of the American Naval Stores Company, however, threw rosins into a state of confusion, and trading in this market has been without feature. Prices are purely nominal, though grades E. F. and G. are respectively quoted at $5.50, $5.60 and $5.70 at New York and $4.90, $5.00 and $5.10 at Savannah.

Movement in caustic soda and soda ash is very good on old contracts and also in small lots of new business, but the market generally reflects a very weak tone whenever buyers enter it with prospects for long contracts. Markets are quoting 1½c for 76 to 78 per cent. caustic soda, basis of 60 per cent., but this quotation is no criterion for new contracts. Soda ash is quoted at 60c to 70c per 100 pounds, basis of 48 per cent., according to packings, f.o.b., makers' works, in car lots, and 65c to 75c per 100 pounds in less than car lots. The 48 per cent. test is quoted at 70c to 80c, f.o.b, makers' works, in our lots.

Bleach is easing off slightly. The recent heavy arrivals at the local port has tended to increase the supplies in local hands, and spot prime lots are now obtainable at $1.35 to $1.40, according to seller. Domestic brands are being firmly maintained, but the supply is reported to be well contracted for over the greater part of 1913. Local dealers quote this brand at $1.35, in car lots, f.o.b., makers' works.

China clay is very scarce, due to the many strikes in England last year and the poor weather conditions on the Continent, causing many of the mills mining it to stop operations. Comparatively little clay is coming into the local market, and many cases are heard of where importers are forced to seek substitutes to fill their contracts. Imported clays are quoted at $11.50 to $18 per ton.

Agalite is in very strong demand, and prices are being firmly maintained at $9.50 per ton, f.o.b., mill. Local distributors are firm in their belief that this condition will continue to exist for some time to come, as they say mills are now taking on heavier supplies than they ever have before.

Sulphur or brimstone is improving in demand, and the situation to-day reflects a steady volume. Prices are practically stationary, and current quotations are made on a basis of $22 to $22.50 per ton, according to point of delivery.

EDWARD PARTINGTON COMPANY'S PLANS.

Hon. N. M. Jones, manager of the Edward Partington Pulp and Paper Company, St. John, N.B., reports that the company's cut for the past season on the Gibson lands amounted to between 17.000.000 and 18.000.000 superficial feet. Of this amount about 14,000,000 feet was cut on the Nashwaak and the balance on the Bartholomew River. Referring to the company's plans for Marysville, Hon. Mr. Jones said that a decision had not yet been received from the company's headquarters in the old country as to whether a pulp mill would be selected at Marysville or not. The intention at present was to saw only about 2,000,000 or 3,000,000 feet of the company's cut at Marysville this year, while the cut on the Bartholomew River would be manufactured as usual at Blackville. The company have a bill before the legislature to give them power to establish rafting grounds at the mouth of the Nashwaak, and expect to handle their logs cut on the Nashwaak from that point.—Canada Lumberman.

GERMAN BUSINESS MEN'S TRIP TO CANADA.

An opportunity for Canadians to bring before German capital the advantages of our country in the manufacture of pulp and paper will be afforded in the trip this summer during July and August of the German business men.

They will be received by the various provincial governments, boards of trade, and so on, and are making this tour with an eye to the openings in Canada for investment and business enterprise.

They will arrive in Quebec on July 4th and tour the entire country, stopping at the various centres for various lengths of time.

We trust that those interested in our industry will take advantage of this opportunity of interesting foreigners in our unique opportunities.

THE SECRET OF SWEDISH FILTER PAPER.

The secret of the popularity of the Swedish filter paper is due to the climatic conditions of the country of manufacture. The finest qualities of filter paper can only be made in the winter time in cold countries. In the course of manufacture, after the paper has been formed and washed thoroughly to remove all traces of chlorine and acidity, it is pressed and hung out in open barns in order to freeze it. The paper is made soft and porous by the freezing process, since the ice crystals formed within its substance serve to drive the fibres apart and increase its absorptive capacity. Experiments have been tried of subjecting paper that has been dried in a warm atmosphere to a subsequent freezing operation in order to impart the desired softness and porosity, but with poor success.

Time's Test is The Severest Test of All

¶ A paper watermarked with the date has been in storage for three years. It is tinted with INDANTHRENE BLUE and its color remains as white as the day it was made.

¶ As it has long been known that some white papers turn yellow in storage is not this an interesting test from the view point of both the paper manufacturer and the paper user?

¶ When considering the relative merits of white papers the buyer will give preference to the paper with the best color. If color is equal, but the one is fast and the other is not, is there any reasonable doubt as to which one will finally win out?

¶ The value of fast colors is far-reaching; there is the matter of reputation and of profit. Both are open to one who stands right with the ultimate consumer.

¶ White papers produced with the use of INDANTHRENE BLUE insure the greatest stability of color.

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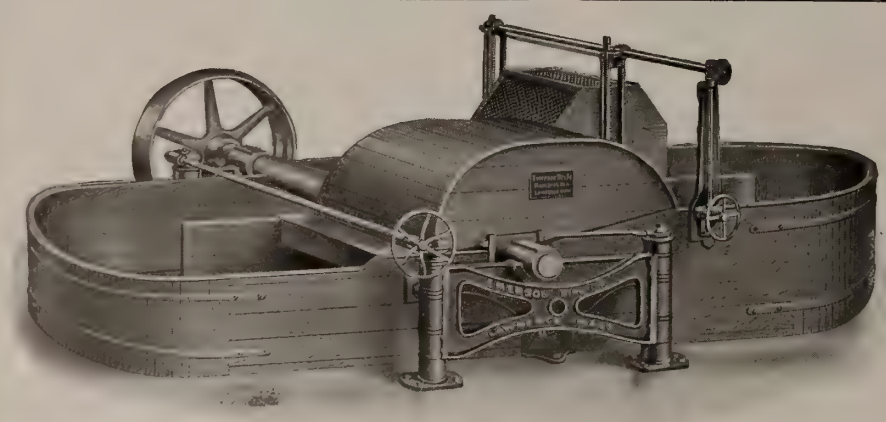
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THE YELLOW DISCOLORATION OF PAPER.

(Abstract of Article by Viktor Schroeller, Duren.)

Papers containing mechanical wood pulp discolor very readily with age, and papers containing straw and esparto pulp are likewise subject to discoloration. Chem. wood pulp turns yellow to a less extent, while a paper made entirely from rag suffers slight discoloration. The coloring may be due to: (1) Destruction of the ultramarine or other blue color used in the manufacture of the paper; (2) actual yellowing of some component of the paper. The color of ultramarine may be destroyed by atmospheric oxidation or by acid residues in the paper causing the sheet to return to its natural yellow color. This is leaving out of account discoloration by external causes, such as exposure to coal gas, etc. The liability of a paper to discolor may be deterred by: (1) allowing to lie in absence of light for at least 1 year; (2) exposing to action of air and light for about 1 week; (3) heating under uniform moisture at 95° for 5 and 30 hours. The intensity of color developed by warming indicates the discoloration to be expected when the paper is aged. Unsized, unbleached cotton or linen half-stuff shows no tendency to discolor. Moderately bleached stock, washed immediately after bleaching, does not discolor, but overbleached stock or one which has been allowed to rest in the drainer for even 1 day before washing will turn yellow with age. This is due to the oxidation of the cellulose fibres. The most important cause of the discoloration of paper is the rosin size. All rosin-sized papers turn yellow. This may be due to: (1) reagent used to ppt. the size; (2) formation of iron-rosin compounds; (3) oxidation of the rosin by atmospheric oxidation; (4) autooxidation, or polymerization of the rosin. The precipitant used has little effect on discoloration. Experiments showed that papers sized with rosin pptd. by com. $Al_2(SO_4)_3$, AcOH, $MgSO_4$ and AcOH, CO_2, alum, HCl, and from alc. soln. by water turned yellow on heating to the same extent. Comparative tests showed that within the limits of common practice, presence of Fe or Fe resinate has little effect on discoloration of paper. Care must be taken, nevertheless, to use an alum low in iron. Discoloration due to the action of atmospheric oxidation on rosin is very slight in all cases, but, nevertheless, rosin develops a darker color on standing due to polymerization or autooxidation, and it is to this fact that the dicoloration of rosin-sized papers is chiefly due. By previous treatment of the rosin with bleaching powder, this polymerization may be accomplished and size made from rosin so treated has no effect on the discoloration of paper.

In prohibiting by ordinance the general use of the roller towel, it has developed that the San Francisco supervisors not only improved sanitary conditions, but also struck a blow at the high cost of washing. A report submitted to the supervisors' supplies committee recently shows that the abolition of the cloth towel has effected a saving in the central office alone of $24.25 in seven months. At the rate of $8 per month the roller towels cost the Health Board $56 in that period, while paper towels for an equal period cost only $31.75. Several brands of paper towels have been introduced there since the ordinance was passed, and all are getting a good demand.



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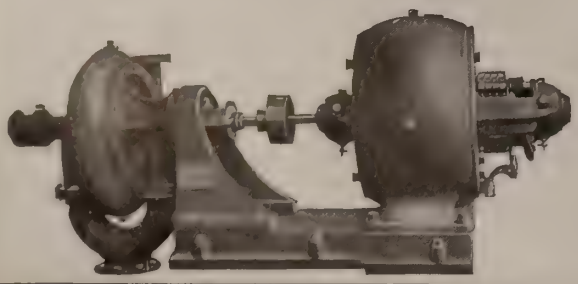
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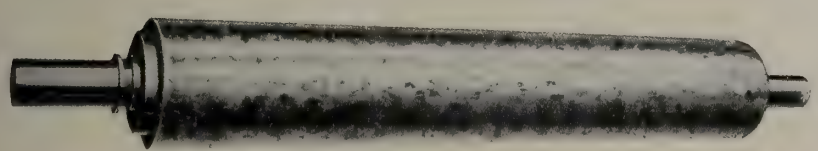
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Our sizings are cleaned by our new patented process and we guarantee this size to be absolutely clean, without the least speck of impurity in the same, preventing thereby black specks in the paper. **We are shipping our size in barrels or tank-cars.**

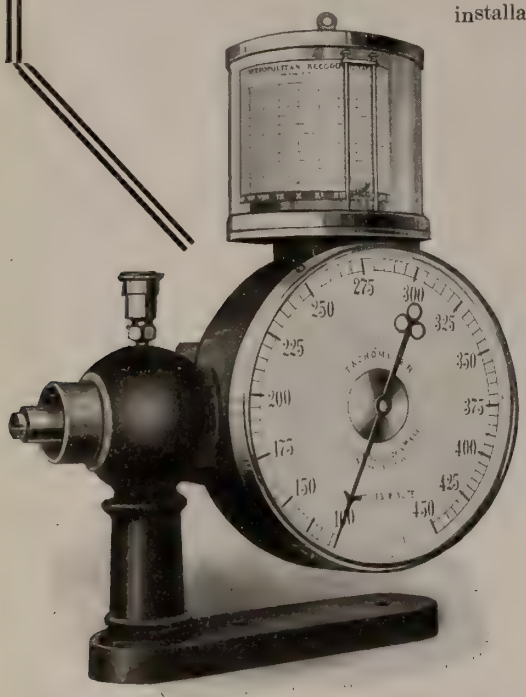
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is a mechanical foreman which, when placed in charge of your paper machine reports to you just what that machine accomplishes during its running period. To be more explicit, its dial face (see illustration) shown at a glance the exact speed at which your machine is running. Furthermore you are furnished each morning with a written record in the form af a chart of the speed maintained by your machine, the day and night before, showing every variation; the number of stops and time wasted between each; the number of breaks that occurred; in fact it gives a record of the exact behavior of the machine during its entire run.

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1 1000 H.P. Bullock Synchronous Motor—13,200 volts, 3 phase, 25 cycle, 375 R.P.M., with Dodge 1,000 H.P. Rope Drive connected reducing speed to 250 R.P.M. for grinders. Rigid pillow blocks with oil chambers.
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1 75 H.P. Westinghouse induction motor with slide rails and secondary controller. Starter for big motor.
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2 Deming triplex pumps 9 x 10. Motor driven. Each 400 gal. min.
4 Centrifugal pumps.
1 84" Seybold "New Century" Cutter.
1 42" "Acme" Cutter.
1 40" "Acme" Cutter.
1 Wood tub beater, 42" roll.
1 Set Calenders—2 rolls—with frames and drive.
1 Cut-off saw frame—Ryther & Pringle.
5 Induction Motors. H.P. 30, 40, 75 and 150.

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TOTAL THICKNESS ONLY 2½ TO 2¾ INCHES

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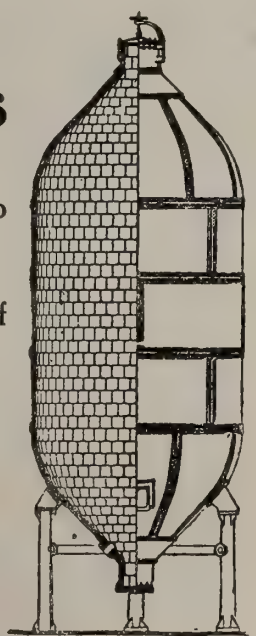
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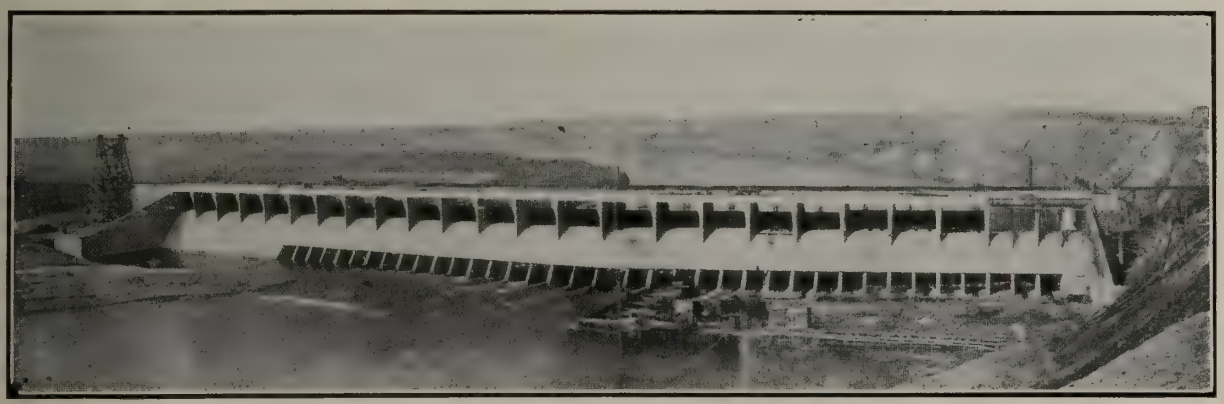
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INDEX TO MILL SUPPLIES

This directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Barkers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Canadian Barker Co., Ltd., Sault Ste. Marie, Can.
Green Bay Barker Co., Green Bay, Wis.
Jenckes Mach. Co., Sherbrooke, Can.
Hamilton, Wm., Co., Peterboro, Can.
Waterous Engine Works, Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.

Beaters
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Holyoke Mach. Co., Holyoke, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Brantford, Can.

Beater Rolls
Bentley & Jackson, Bury, Eng.
DeCew, J. A., Canadian Express Bldg., Montreal, Can.
Marx, J. & Co., London, E.C., England.
Tippet Arthur P. & Co., Montreal, Can.

Belting
Dominion Belting Co., Hamilton, Can.
Federal Engineering & Supplies, Ltd., Toronto.
Reddaway, F. & Co., Montreal, Can.
Sadler & Haworth, Montreal, Can.

Bleaching Powders
Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Winn & Holland, Montreal, Can.
Klipstein, A. & Co., Ltd., Montreal, Can.

Boilers
Jenckes Machine Co., Sherbrooke, Can.
McDougall, J., Caledonian Iron Works, Montreal, Can.

Brass Wire Cloth, Fourdrinier Wires
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier St., Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Camel Hair Belting
Reddaway, F. & Co., Montreal, Can.

Calendar Rolls
Dillon Machine Co., Lawrence, Mass.
Farrell Foundry & Mach. Co., Ansonia, Conn.

Chemicals, Colors, Etc.
Brunner, Mond & Co., Montreal, Can.
Gewerkschaft Sachtleben, Homberg, Niederrheim, Germany.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter St., Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Valley Iron Works, Appleton, Wis.

Chip Screens—
Carthage Machine Co., Carthage, N.Y.

Cranes
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Northern Crane Co., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.

Conveying Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Can.

Cutters
West End Engine Works, Edinburgh, Scotland.
Dillon Machine Co., Lawrence, Mass.
Chambers & Simpson, Toronto.

Cylinder Covers—
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Dandy Rolls—
Johnson & Sons, C. H., St. Henry, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining
Can. Boving Co., Toronto.
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Evaporators
Scott, Ernest & Co., Fall River, Mass.
Zaremba Co., Buffalo, N.Y.

Experimental Machinery—
Marshall, T. J. & Co., Ltd., London, Eng.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Ayers, Ltd., Lachute Mills, Que.
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Heimbach, Thos. Jos., Ltd., Duren, Germany.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

MILL SUPPLIES CONTINUED

Laying Machines
Chambers & Simpson, Toronto.
Collis & Sons, J., London, Eng.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal. Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.

MILL SUPPLIES CONTINUED

Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines

Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste

Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines

Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C. & Co., Ltd., Craig St., Montreal, Que.

Kraft—

Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, J. C. & Co., Ltd., Montreal, Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—

McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—

Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—

Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,
Deputy Minister.

Department of the Interior, Ottawa,
December 20th, 1912.

PAPER MILLS CONTINUED

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Corrugated Paper—
Lazier Paper Mills, Ltd., Belleville.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines. Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson & Co., Ltd., J. C., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson & Co., J. C., Montreal, Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C. & Co., Ltd., 700 Craig St, Montreal, Que.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag—
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
Wilson, J. C. & Co., 242 Craig W., Montreal, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Tissue and Toilet—
Eddy Co. The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. & Co., 242 Craig W., Montreal, Que.

THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst,

Minister of Lands, Forests and Mines,

Toronto

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Wood and Pulp Board—
Booth, J. R., Ottawa.
Campbell Lumber Co., Weymouth, N.S.
Eddy Co., The E. B., Ltd., Hull, Que.
Gore Paper Mills, Dundas, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Wrapping—
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Scotch Fibre", "Invictus Fibre", Hercules Manilla", St. Francis Manilla", "Wave Crest Drug."
Crabtree & Sons, Edwin, Crabtree Mills, Que.
Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont .
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Montreal Paper Co., St. Bazile, Que.
News Pulp & Paper Co., Ltd., Montreal, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Strathcona Paper Co., Strathcona, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

PAPER MILL AGENTS AND COMMISSION MERCHANTS

Calgary, Alta.
Davis, W. D. & Co., 3rd St. W. and 7th Ave.
Tees & Persse.

Edmonton, Alta.
Tees & Persse.

Saskatoon, Alta.
Tees & Persse.

Vancouver, B.C.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.

Victoria, B.C.
Mitchell Bros., 8 Bastion.

Moose Jaw, Sask.
Tees & Persse.

Regina, Sask.
Tees & Persse.

Winnipeg, Man.
Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Douglas & Ratcliffe.
Hudson Paper Co.
Kilgour Bros.
Martin, John, Paper Co., Ltd., 319 William.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.

St. John, N.B.
Schofield Paper Co., Ltd., 26-30 Prince William.

Moncton, N.B.
Reid, F. P. & Co.

Halifax, N.S.
Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.

New Glasgow, N.S.
McGregor, R. & Co.

Kingston, Ont.
Hendry, J. A., 75 Princess.

Hamilton, Ont.
Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

Ottawa, Ont.
Barnard, W. R., 228 Albert.
Reid, C. De Wolf.

Port Arthur, Ont.
Tees & Persse.

Toronto, Ont.
Barber-Ellis Co., Ltd., 71 Wellington St. W.
Brown Bros., Ltd., 51 Wellington St. W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay St.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gain, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George
McNairn, J. H., 5 Jarvis.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Whyte, Alex., 64 Wellington St. W.
Wilkinson, E. H., Telephone Building.

Montreal, Que.
Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
Lloyd, Ed., Ltd., Eastern Townships Bank Building.
McFarlane, Son &Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Co., 138 McGill.

Quebec, Que.
Andrews, F. H. & Son, 64 St. Paul.
Reid, C. De Wolf, Herald Bldg.
Rolland, J. B. & Son, 36 St. Paul.

Foreign.
Mawson & Co., Geo., London, England.
Whitaker Paper Co., Cincinnati, Ohio.

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WANTED, immediately for new Sulphate of Soda Pulp Mill, experienced night foreman, Cooks and Chemical Recovery Room help. State experience and wages asked and give references. Apply D. L., Pulp and Paper Magazine.

WANTED—Thoroughly experienced and competent paper machine millwright for Canadian mill. Good position for right man. Apply with record of experience, age, salary expected and date can report. Box 54 Pulp and Paper Magazine.

WANTED—Tour Boss, for ground wood pulp mill. Must be sober. State experience, references, age, etc. Address: Box 56, Pulp and Paper Magazine of Canada.

FOR SALE.—As we are using all our water Power at our Pulp Mill for electricity, we are disposing of the Pulp Mill Machinery—including Millard Patent Grinders which were in use only a few months and are absolutely as good as new, also Wet Machines, Barkers, Screens, Pumps, Piping, Shafting, Stones, etc., etc., all in good condition. Full information will be given upon application. Apply Box "A," Pulp and Paper Magazine.

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Saves steam

It also retains the proper amount of moisture in the paper thus illiminating the breaks at the calenders.

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TORONTO & MONTREAL.

SCANDINAVIA BELTING TORONTO

Glens Falls Machine Works

Glens Falls -::- **New York**

Sole Manufacturers of

The Rogers Wet Machine
for chemical pulp

Tromblee & Paull Rotary Sulphur Burners

The Moore Rotary Screen
for ground wood pulp

Improved Standard Grinders

Improved Wet Machines

Rotary Pumps, etc.

Write for particulars and specifications they will interest you

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COMPANY

Lawrence - Mass.

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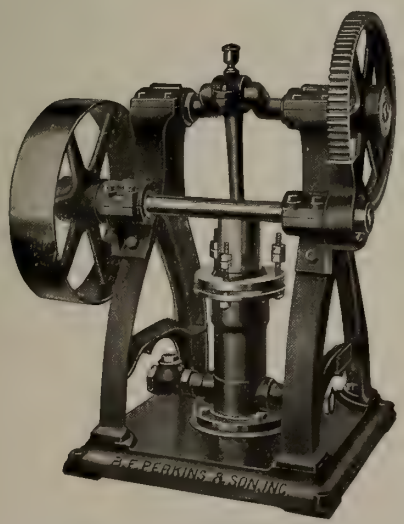
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Horne Jordan Engines
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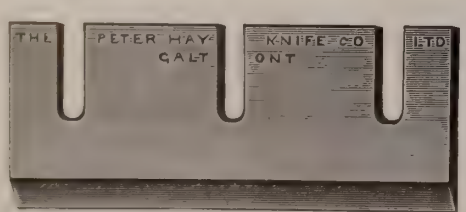
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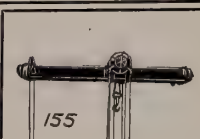
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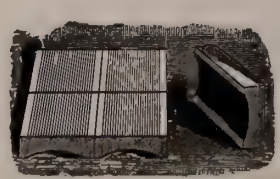
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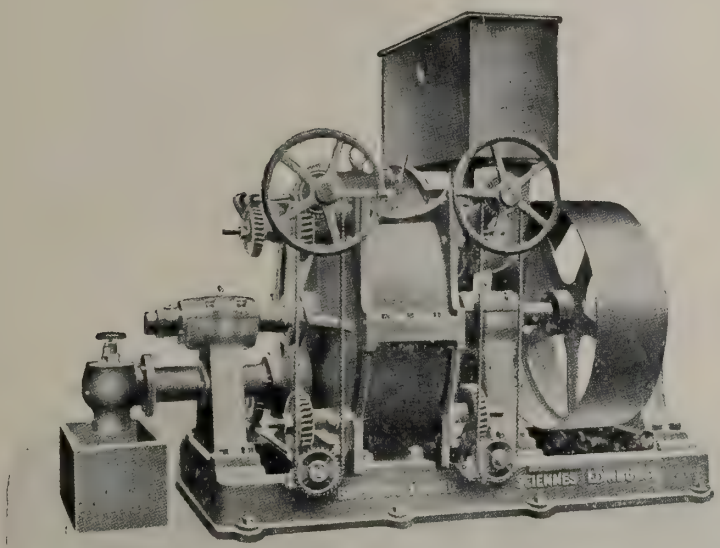
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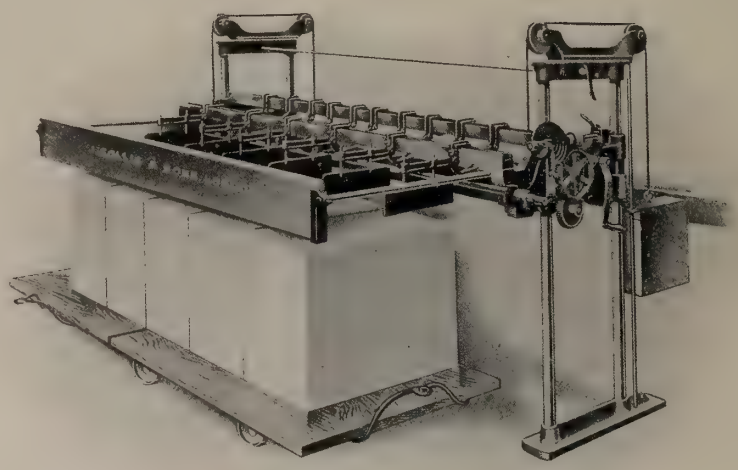
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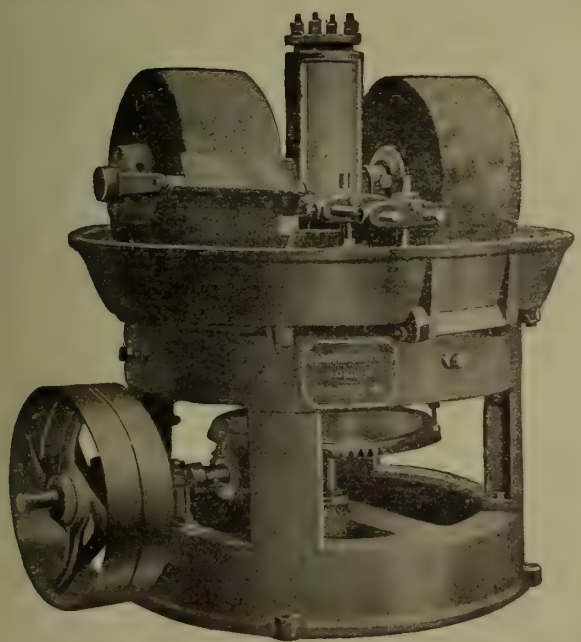
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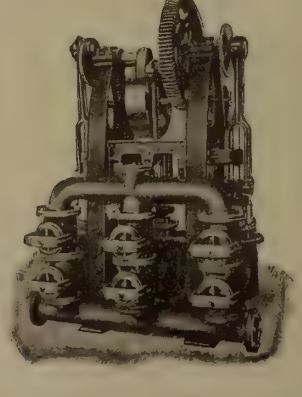
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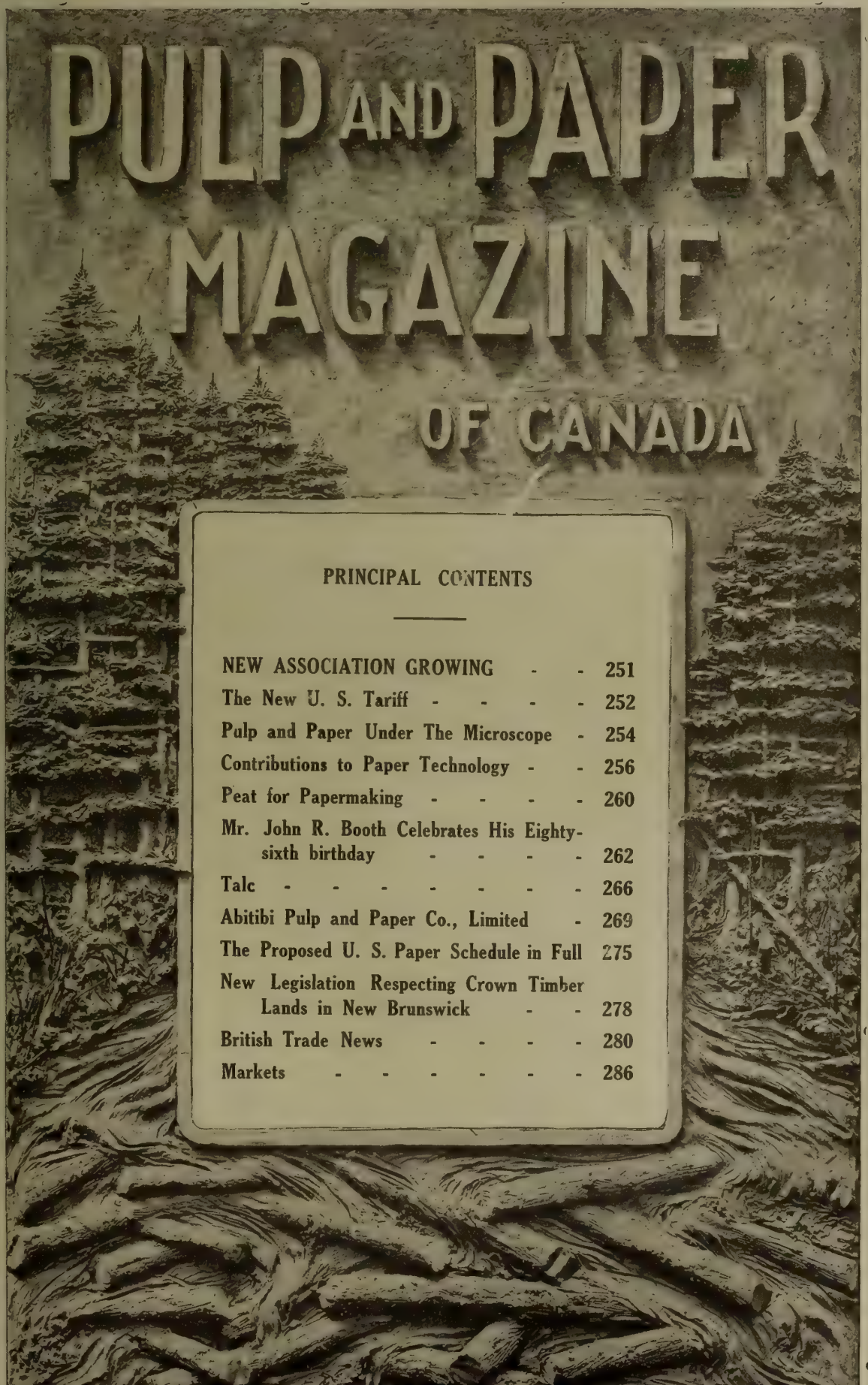
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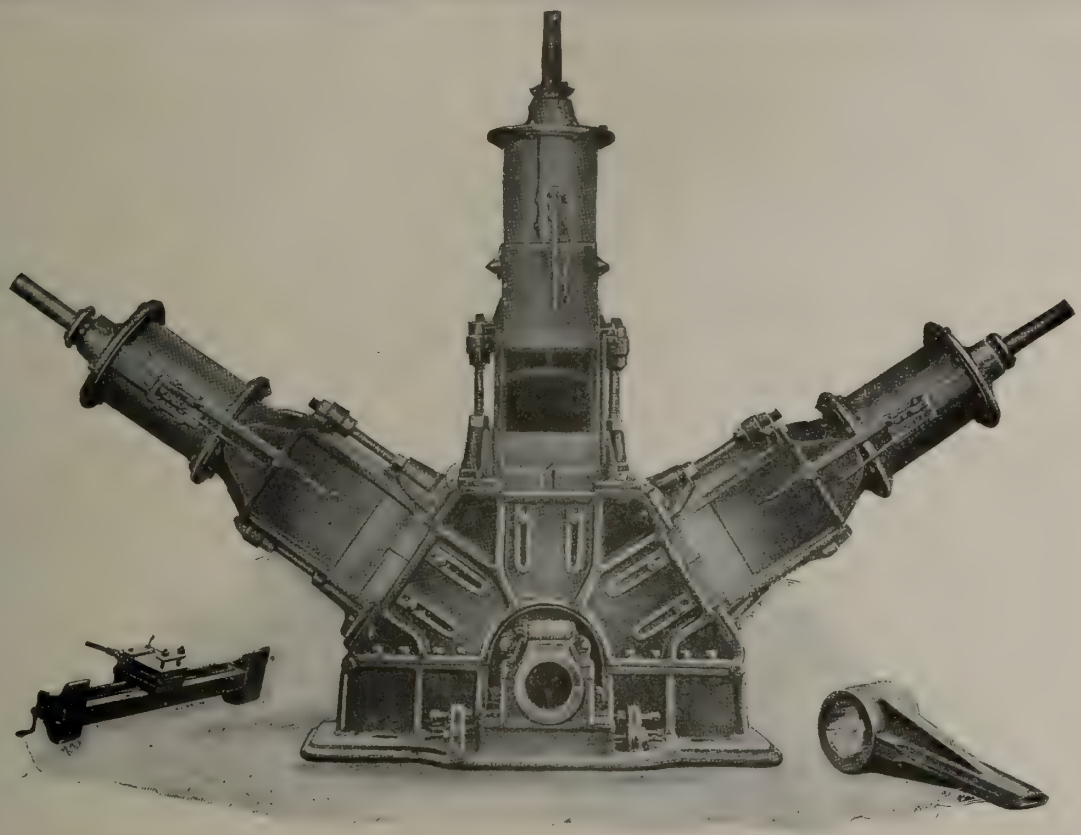
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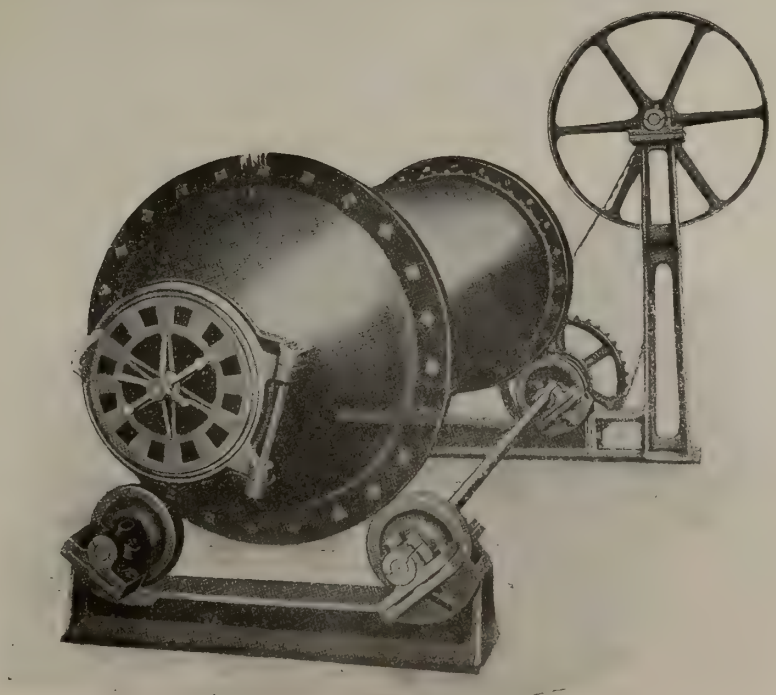
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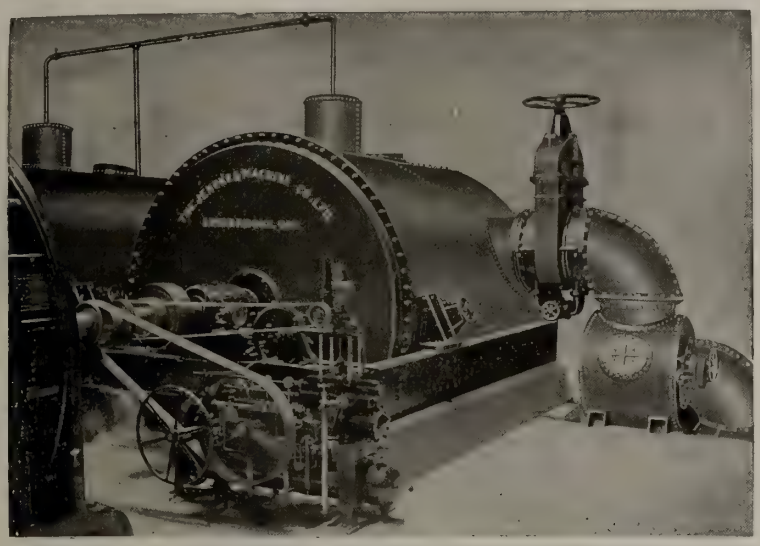
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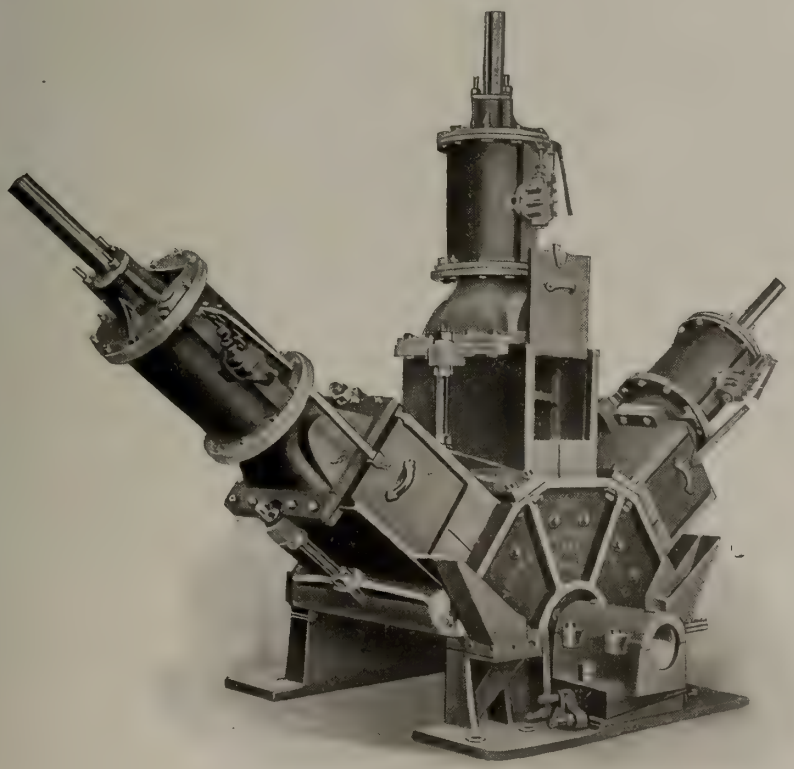
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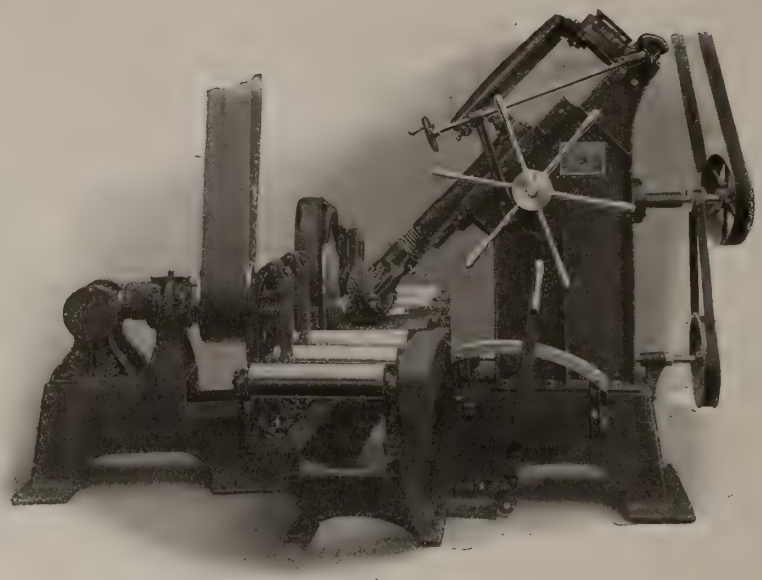
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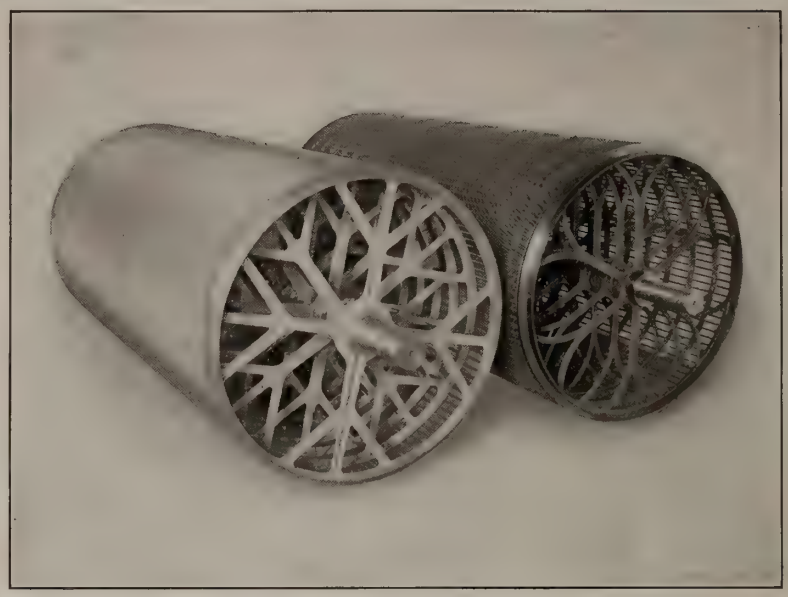
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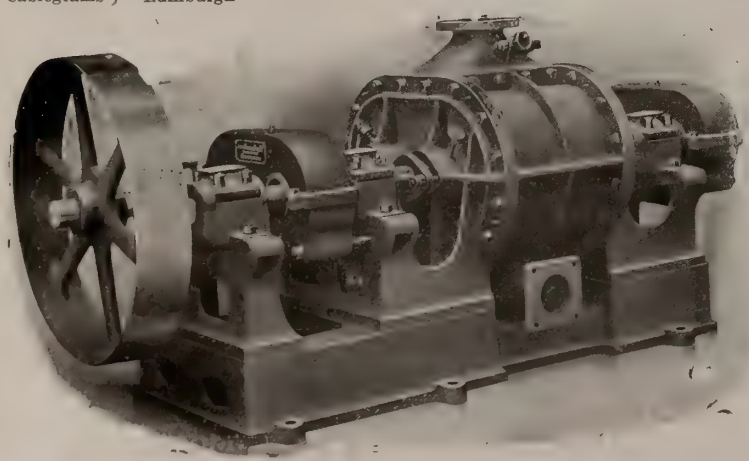
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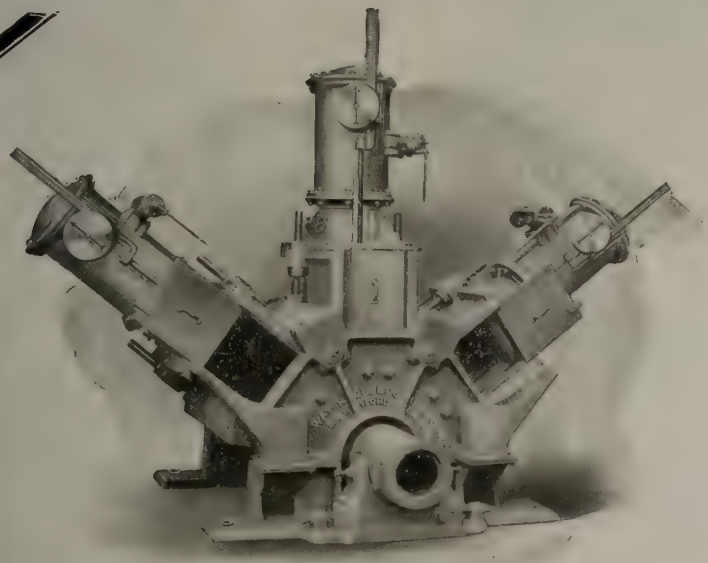
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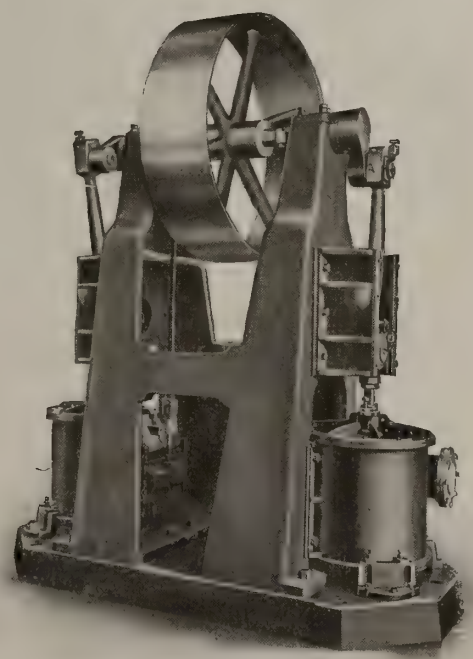
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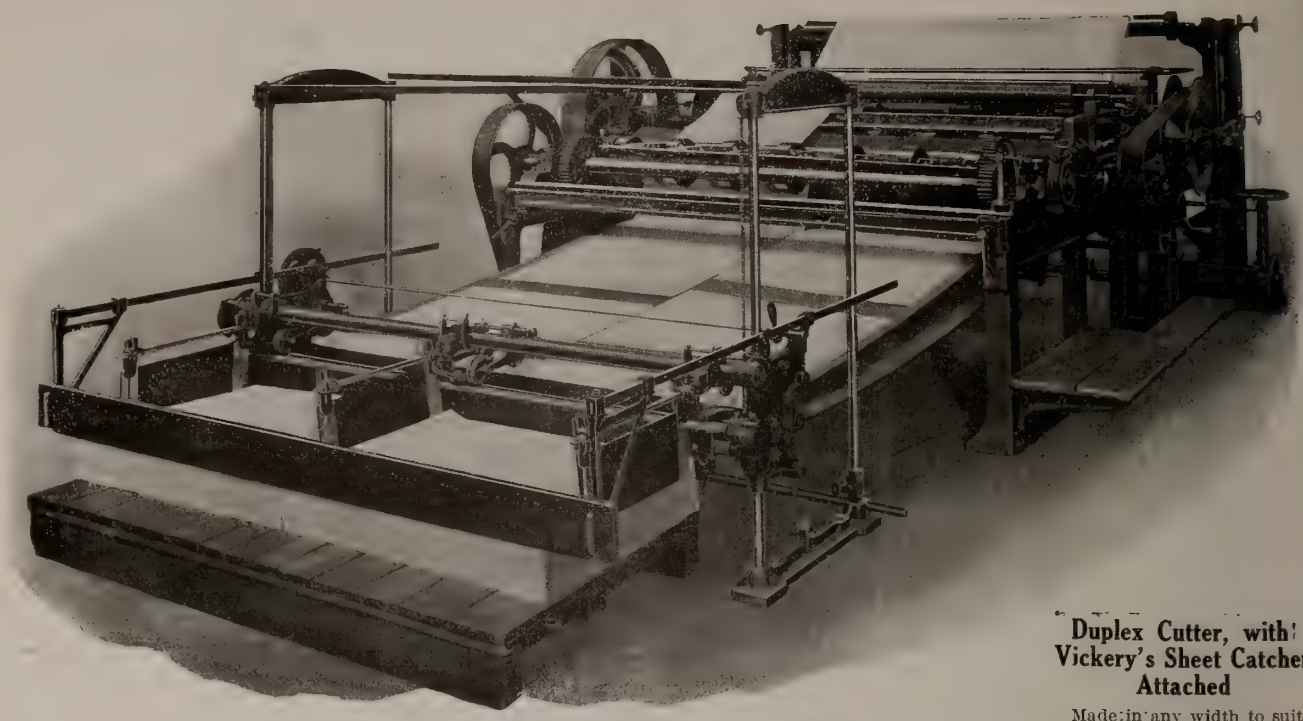
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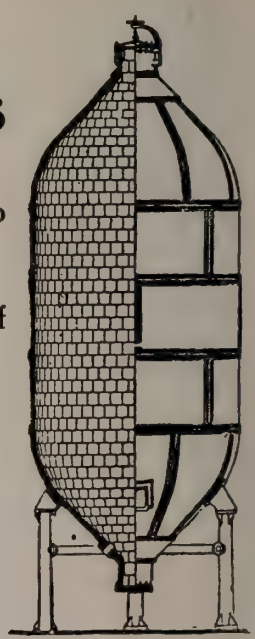
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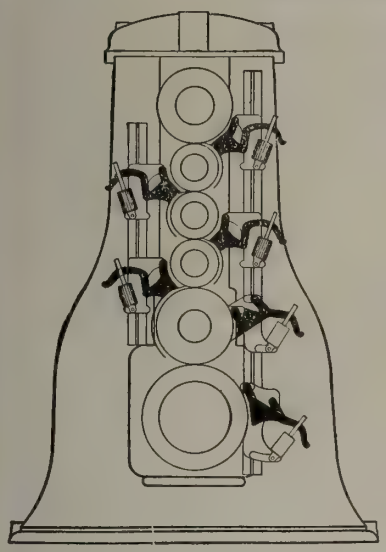
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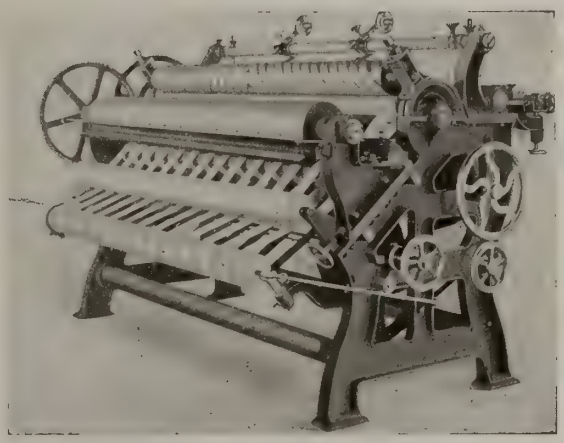
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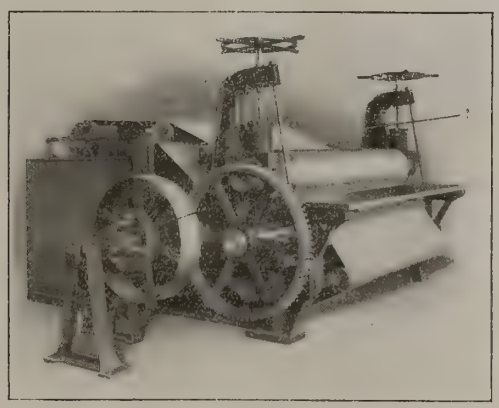
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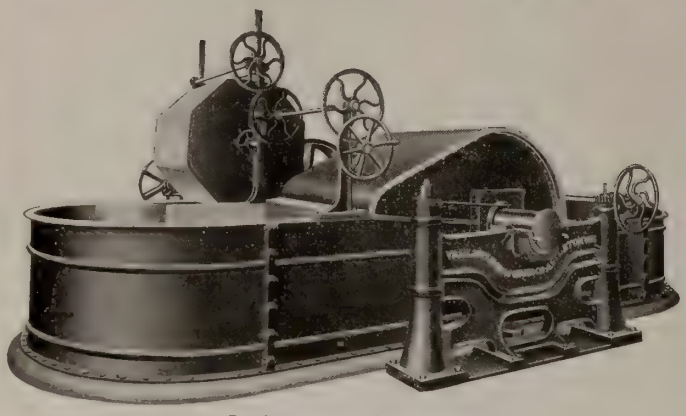
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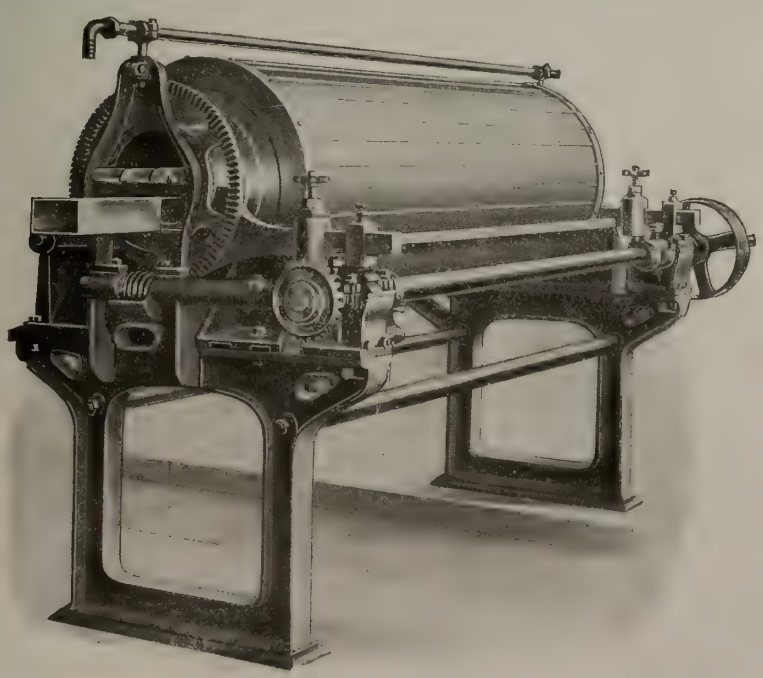
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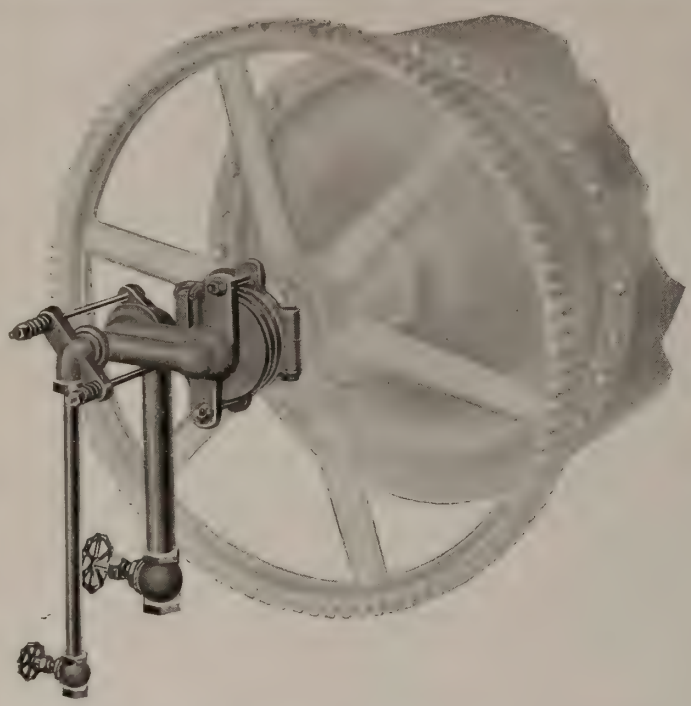
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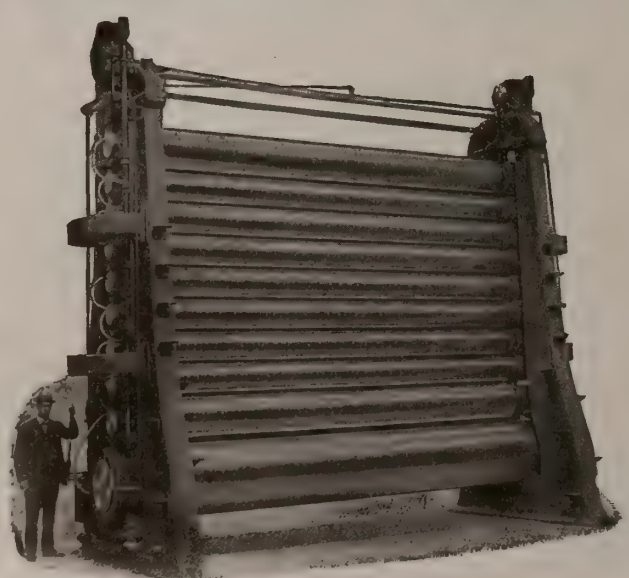
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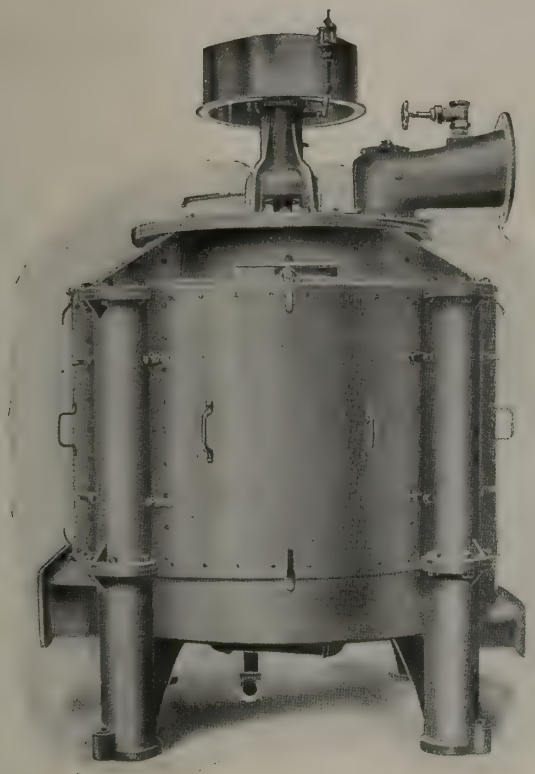
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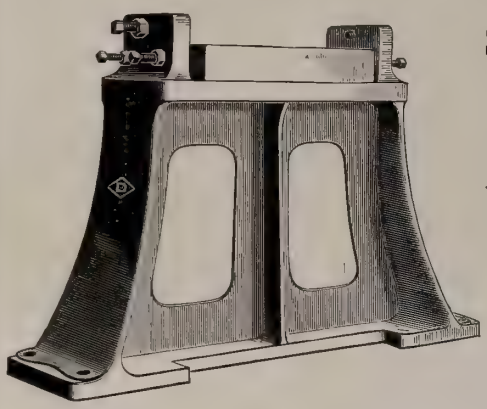
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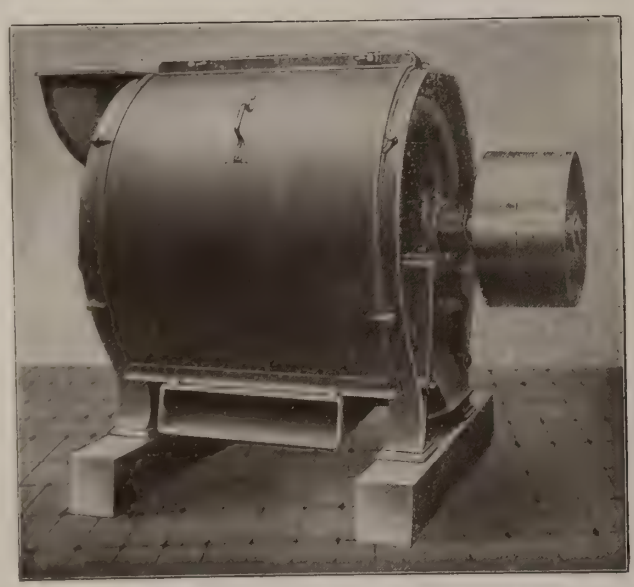
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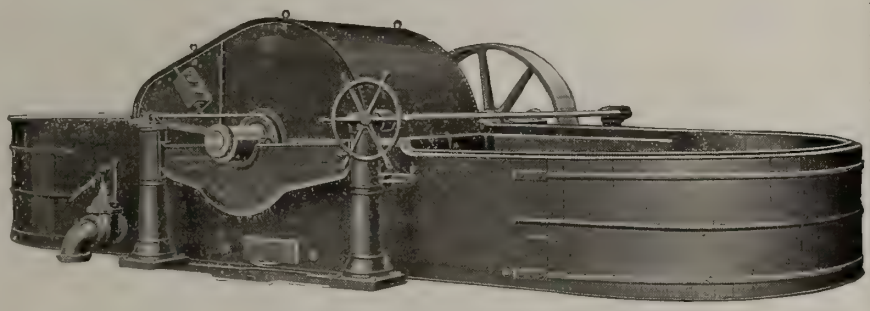
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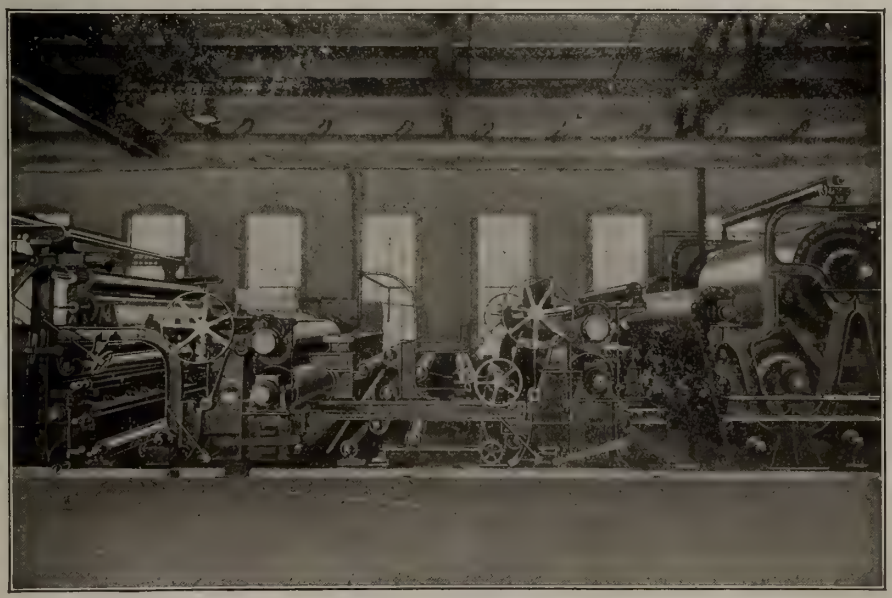
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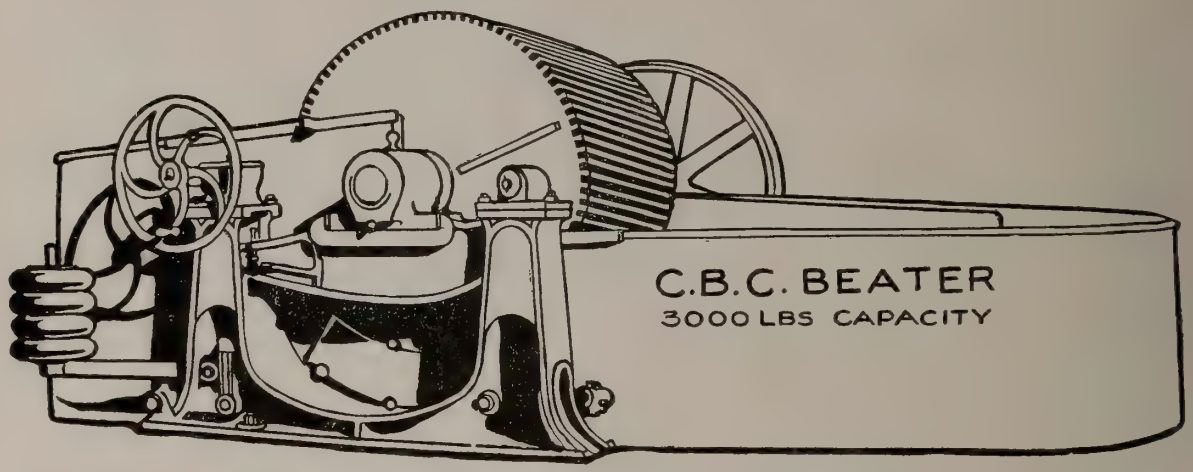
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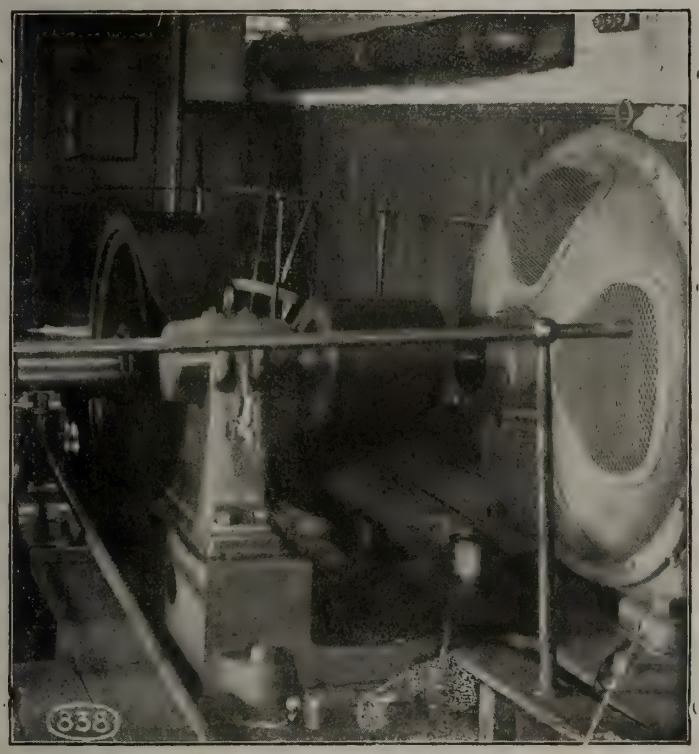
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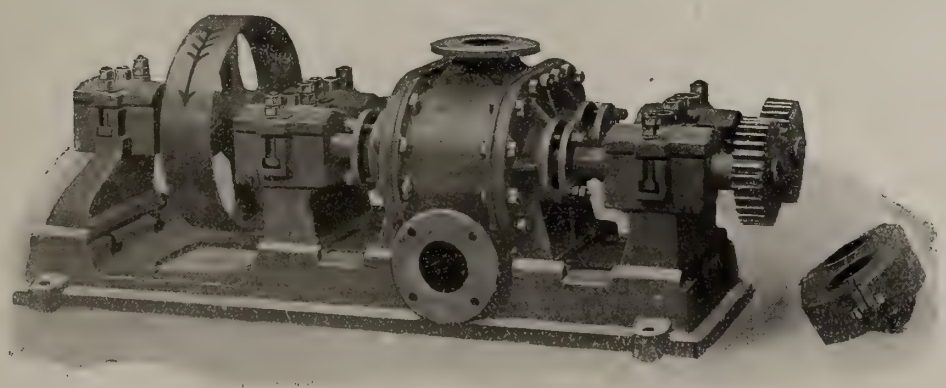
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OF CANADA

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

A. G. McINTYRE, B.A., B.Sc., EDITOR

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VOL. XI. TORONTO, APRIL 15, 1913 No. 8

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THE NEW ASSOCIATION GROWING

Enthusiastic support of the movement in forming the Canadian Pulp and Paper Association has been even more than was anticipated at the original meetings. Many firms feel they have been waiting for such an organization for some time, and are only too glad to endorse the movement and lend it their support. The present omens for completing successfully the organization are very bright, since the largest and oldest mills have united in backing up the movement.

Co-operation in all branches is the watchword of the present day, and it seems to be the marvel to others that the Canadian pulp and paper industry delayed so long in getting together for mutual benefit.

Suggestions which are already coming in to the association, as further scope for its activities, are numerous, and we doubt not that shortly the hopes of the leaders of the industry may be realized in the new body. It is expected that shortly a permanent secretary-treasurer will be appointed to give the association's work his attention and consumate the organization. Data will soon be gathered, on markets, production, and consumption, and all those conditions which effect a healthy industry. For the present the organization will, as far as possible, imitate that of the United States, and it is hoped even at the first to bring to our pulp and paper manufacturers a large percentage of the benefits, derived from their body under the able leadership of Mr. Hastings.

Those who have not yet forwarded their cheques for membership should do so immediately, to have a part in shaping the initial policies and guiding the efforts.

THE NEW U. S. TARIFF

Last week marked an advanced step for Canadian pulp and paper industry in the recommendations of the Ways and Means Committee of the United States Congress, which, if they carry, will make radical changes in the present industrial conditions, results of which it would be hard to predict in detail. It had been forecasted from numerous sources that print paper and ground wood will enjoy free entry from the world without any restrictions as to pulp wood, export duties or other hampering conditions. There is no doubt that this will mean much to the Canadian print mills since, at the moment, Canada has a slight over-production of news which has resulted in some softening of prices. If we are to believe the word of Phillip T. Dodge, president of the International Paper Co., it will also mean a rapid expansion and building up of news mills in Canada. He states that his firm has anticipated this by securing options on a number of Canadian openings, notably those at Chesley, Que., and Grand Falls, N.B. We venture to predict, however, that the operations of this firm will not be transferred to Canada as rapidly as Mr. Dodge declares, although there is no doubt that the news print industry is speedily moving north. We must remember, however, that the gentlemen quoted was anxious, when he made this statement, to influence American legislation, it now appears, without avail. There is no doubt, however, that a very large number of mills under contemplation will immediately go forward under these conditions, together with those of an easier money market. On the whole, then, we anticipate that it will have a stimulating effect on this branch of paper making.

Ground wood will of course share in this, as the two are so intimately related. The duty, however, has been so small that it is not a serious handicap with the larger mills, except when the price has been very low, as it has been the last few months. Reductions will, however, stimulate to a considerable extent ground wood in Canada. A peculiar phase is the admission of lumber and manufactured lumber free, since this represents a different condition than pulp. It will, however, not have such an extensive effect on that industry as will be felt in pulp and paper.

Results of the investigations of the Ways and Means Committee in their schedule "M," as proposed to Congress shows very plainly to anyone in touch with the conditions, the prepondering influence of John Norris, chairman of the Committee on Paper of the American News Paper Association. Notwithstanding the fact that President Wilson, in his statement, claims that they have abolished the attitude of coersion in the matter of foreign countries to meet them as they wish in tariff, the new tariff, with all its reductions, at the same time has a club aimed at Canada, although by no means what was enforced under section (2) of the Reciprocity Act. John Norris is openly advocating free print and free unrestricted wood with the purpose, of course, of working Canadian against the American mills in the price of news print, and through his influence we doubt not the section on chemical pulp has been framed, which contains this tap at Canada.

Speaking from the American point of view this section is most undiplomatic, and will, we predict, work out to the detriment rather than to the benefit of themselves. A duty of $2 a ton on Canadian chemical from crownlands, in provinces with export restrictions on pulp wood, is the way they hope to force these provinces to relinquish their policy. This is especially aimed at New Brunswick, the main producer of chemical pulp. Looking at this, however, it occurs to us that their own aims have been frustrated in that they will provide a competitor, in the chemical mills, for freehold wood in Canada with their own mills, which draw their wood supply from north of the boundary. It seems to us, too, that this hardly savors of fair play, since Sweden is allowed to bring in their chemical pulp free of duty to the United States, and when we think that Canada buys from United States three hundred and sixty million annually, most of which is manufactured goods, while Sweden only buys twenty-five million, we see how the Government has differentiated and discriminated against a good customer to the advantage of a negligable buyer. Besides, the rate of wages in Canada is higher than that in the United States and about double that in Sweden. The chemical pulp we export from the United States runs from three to four thousand tons a month, which is only about 10 per cent. of their total imports of chemical pulp. The matter of the duty which they would collect on this is so small that one wonders at the short-sightedness of the committee in stabbing this small importation, and showing their club, though small, to Canada for such a paltry return. It simply points out that we must cherish our supply of raw material, which, although we are pleased to think of it as inexhaustible, is by no means so.

One may find exactly parallel cases in the United States and Germany twenty-five years ago. These countries at that time had enormous supplies, but did not anticipate the phenomenal development of the news print trade, which absorbs so rapidly the fount of raw material. At one time it was very common to see the statements of the enormous resources of Germany with her Black Forest, and other forest resources. At that time, however, we must remember they were a country of twenty millions instead of sixty millions as now, and the per capita consumption of paper very much less than that of the increased population at present. The result, we see, is that Germany now draws a very large percent of her wood supply from Russia, with the result that wood cost has gone up in ten years seven dollars per ton of chemical pulp. We see then the chemical mills all manufacturing the higher grades, and a condition seldom realized, that Sweden supplies Germany with her low-priced chemical pulp on account

of the low cost of labor, in spite of the fact that in Sweden, too, pulp wood has gone up five dollars per ton of chemical pulp. Canada should then, in spite of her numerous resources in this direction, be most careful of their conservation, especially in consideration of supplying the raw material to grasping competitors south of our boundary. The pulp market of to-day is not an American market, but a world's market, and these newest developments in the United States tariffs will not readjust the entire markets of chemical pulp, as many think. One result will be that the English market, which at present is fairly good, will stiffen to a wonderful extent, with the result that Scandanavians to a larger extent will seek that market, since it is nearer home. The whole upshot will be that the world's price of chemical pulp will materially advance with the result that the American paper maker, who must have cheap pulp, will suffer. How much better it would have been for him, even though a small importation to have saved the two dollars a ton on Canadian chemical. When they come to realize this we doubt not that agitation will be brought forth to have this joker removed from the new schedule "M," for it certainly will not have the desired effect to induce Canada to withdraw her conditions of wood export.

On the whole, we are much better off with the new tariff, which should prove a healthy stimulus to our entire industry and to the many mills now under construction or contemplation.

SULPHITE

The exceptional market conditions of the last couple of years has turned the eyes of investors interested in pulp and paper to sulphite. Indications now point to the prospect of numerous developments in sulphite mills. Just at present the Canadian production could stand doubling without affecting the market, provided of course it is done over a short period of time, as it will be by the time it takes to build the mills. There is a possibility, however, that the development may run to excess in this line to the loss of the newer mills.

The present production is as follows, for all grades:

	Tons per day.	
Made for private consumption	412	
Made for sale	270	
		682
Prospective mills, to be made for sale	235	
Plans not yet completely financed, 4 mills	100	
		335
Grand total		1017

Sulphite is a radically different scheme financially from ground wood, in that it requires scientific operation, not necessary in a mechanical pulp mill. A mill cannot get on a good operative basis as quickly as the others, especially in the higher grades of easy bleaching or bleached. For these reasons the experience of the older mills will give them a decided advantage for some years.

We only wish to utter a warning, which may not be necessary, that interests planning on sulphite mills should carefully weigh what conditions will be in five years. The American market does not offer the same opportunity to displace their own mills, as is being done in print, for their sulphite mills are by no means in the same class as many of their news mills. They have some of the best sulphite mills in the world which are in a number of cases models of efficiency. This to a large extent will offset their high cost of wood. It will be some years, too, before we can displace the Swedish, which will come in under much better conditions under the new schedule M. Of course the price of wood is rapidly rising in that country, and it will not be long before we can shut them out. This will not be, however, until more of our mills get down to a closer basis of scientific operation, in which the Scandanavians are so far ahead of us. It is certainly coming our way, but let us be cautious and grow substantially rather than too rapidly.

COMMENT

The Americans don't need to worry, Canada buys as much paper in dollars and cents from them as they do from us. The difficulty comes in, however, that they are accustomed to think of Canada buying from them in manufactured goods about ten times the value they take from us in raw material, as the only equitable basis. We still depend on the United States for some higher grades, and for specialties, which represent higher prices.

In this issue we open a series of articles on Talc by Mr. R. P. D. Graham, Assistant Professor of Mineralogy at McGill University, Montreal. This article deals with Talc in general, its formation, etc., from a scientific viewpoint. In the next issue Mr. T. Lindsey Crossley, the paper mill chemist of Montreal, will discuss Talc as a paper filler, showing a number of magnified views. The editor will follow with another article, and beside these we will run a number of short special articles. We believe that Talc possesses many unique qualities, as a paper filler, and that Canadian mills have missed an opportunity in not making more use of one form of natural raw materials. It is to assist "Paper made in Canada from Canadian raw materials" that we are lending ourselves to this discussion.

PULP AND PAPER UNDER THE MICROSCOPE

By SINDALL AND BACON

Special Series of Contributions to Pulp and Paper Magazine.

CHAPTER I.

This series of articles opening in this issue by Sindall and Bacon, of London, will, we hope, prove to be of immense interest and value to our readers. A microscope in a paper mill is a wonderful asset, and we hope that the expense we are going to in securing these articles from such experts will be justified by an increased appreciation among Canadian mills of the value of scientific knowledge of the raw materials and finished product. We especially commend these articles to the careful perusal of mill operators as they appear. —Editor.

Introduction.

The general utility of the microscope in the service it renders to the development of a manufacturing industry, and the assistance it gives to the enquiries of the technologist, quite apart from the more purely scientific work for which it is essential, has long been freely acknowledged. This instrument is, or should be, as common a feature in the laboratory of the papermaker as a balance or a burette.

The microscope serves two useful functions: first, as an apparatus for ordinary routine analysis, and, secondly, as an aid to experimental and research work. In the majority of cases it is probable that the latter application seldom finds its proper place, though one might naturally suppose its undoubted value for routine investigations would lead to an extended use of the instrument.

The ordinary analytical processes as required in the manufacture of paper and pulp mainly concern themselves with the determination of the furnish of the paper, the percentage of the various fibres that go to make the furnish, and the quality of the fibrous material. That is to say, the microscopical examination of a mixed furnish gives the source of the two or more fibrous constituents found, the proportions in which they are present, and the quality. The condition of the beaten fibres is also noted, and useful information thus obtained.

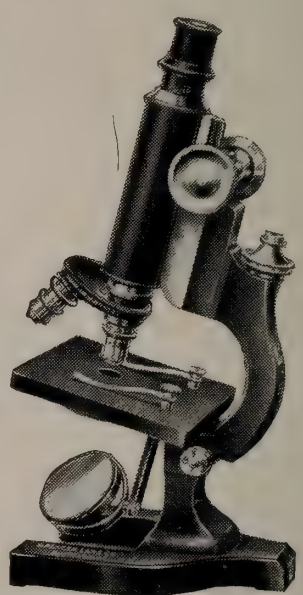
There is hardly any limit to the scope of the instrument when applied to research and original investigation problems. Only a few instances of the class of work possible need be quoted, such as the measurement of the length of the fibrous elements of a new wood or papermaking material, the gradual alteration in the nature and dimensions of the fibres when beaten and otherwise treated for paper, the effect of "hydration," the relation of the conditions of grinding to the quality of the pulp produced, the physical structure of the different kinds of paper and so on.

The Microscope and Accessories.

It is scarcely necessary to go fully into detail as to the apparatus required, since adequate information on this point can be gathered from text books. It is sufficient to say that for routine work, a standard instrument of good quality, with three objectives, 1-inch, ½-inch and ¼-inch, is essential. This should be fitted with a nose piece for convenience in using the objectives, and a mechanical stage, so that the whole of the mount may be brought into the field of view easily. For special investigations additional apparatus is needed in the shape of a 1-6 inch objective, Beale's tint reflector, a substage condenser, polariscope, eyepiece micrometer, and a microtome for cutting sections of fibre and paper.

Staining Reagents.

The most serviceable reagent for general work is a mixture of zinc chloride and iodine. It is capable of giving a deep coloration to the fibre when used in concentrated form, while on the other hand it can be applied in such a manner as to impart a faint tinge of color to the fibre, so as to intensify its structure. Hence



A Hendry Microscope

in the examination of a paper containing chemical wood and esparto, for example, it is an advantage to use a fairly strong solution, for the chemical wood fibres are stained a deep blue and the esparto a deep brown. The strong contrast in color thus assists in the rapid estimation of the proportions in which the two fibres are present. The color is then too deep, however, for any accurate observation of structure. If the latter is needed the proceedure is different. Only a few fibres are mounted on the slide, and the reagent used in a much more dilute form, so that the staining effect is just sufficient to bring out all detail.

The solution is prepared as follows:

Solution (A)—Zinc chloride solution 1.80 to 1.90 sp. gr.

Solution (B)—1.0 gm. Iodine and 10 gms. Potassium Iodide in 25 cc. water.
Add 80 cc. of (A) to the solution (B).
Allow the precipitate to settle. Filter through glass wool into a stoppered dropping bottle.

Other reagents are used, such as aniline dyes dissolved in water and glycerine, and iodine solution by itself. The above reagent is preferable to all for most investigations on wood pulp, though the color is not permanent.

Magnification.

We are assuming that most of our readers have more than a passing acquaintance with the use of the microscope, and are familiar with the elementary details of manipulation. At the same time a few words on the question of magnification may not be out of place.

In the examination of a mixed furnish when an analysis of the mixture is wanted, a low power magnification

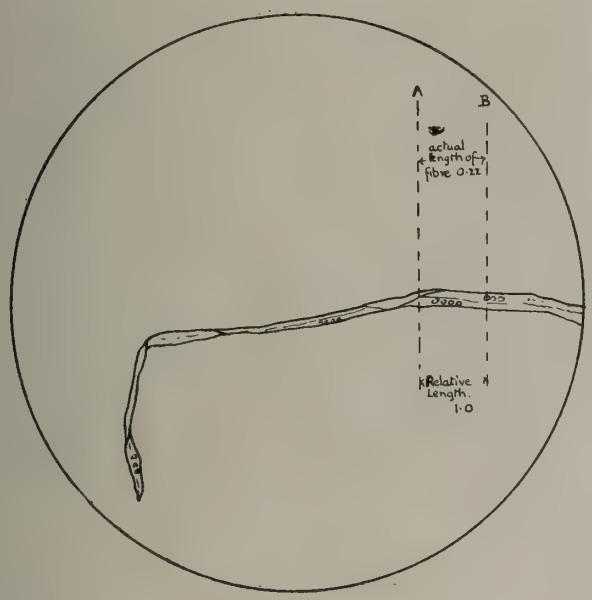


Fig. 1

should be used so as to bring a large number of well distributed fibres under observation at once. This rule is easily applied to such simple mixtures as chemical wood with mechanical or with esparto or with rag. But in some cases as for example cotton and linen, or jute and manila, when final decisions rest not on color reactions, but fibre structure, as of primary importance, a higher magnification is needed. Thus a low power magnification may determine that a given furnish is 60 per cent. chemical wood with 40 per cent. of a fibre resembling manila. Then a few fibres of the latter examined under a higher power settles the question.

These simple illustrations are given as a hint to the student who may be studying the application of the microscope to wood pulp to emphasize the importance of only using high powers for specific purposes.

As a matter of interest we propose to give some drawings in outline taken from a fibre mounted under the microscope to show its appearance with different magnifications.

The fibre is a spruce, the portion of it appearing between the dotted lines, in Fig. 1, measuring 0.22 mm.

THE FLOODS

As the news comprising accurate accounts of the disastrous consequences of the floods comes in, the only consolation that can be afforded lies in the never very comforting thought that matters might have been much worse.

An interesting letter from the Jeffrey Manufacturing Company, of Columbus, Ohio, throws much interesting light on the situation. The effects of the flood have been bad enough and hard enough to bear by the afflicted concerns, without spreading exaggerated accounts concerning their losses and the possibility of their being unable to meet their contract engagements. A good many reports have been circulated about certain plants which were only true to a meagre extent, and which tend to still further damage the business of the companies referred to. While the aggregate damage to the various paper plants throughout the flooded districts has been serious, conditions in individual instances have not been as bad as might have been expected. There is likely, of course, to be some inconvenience caused in many cases, but only a little patience and forbearance will be needed to straighten matters out in most instances.

One report which attracted nation-wide attention was the announcement that the Champion Coated Paper Company's paper mills at Hamilton, Ohio, had been completely destroyed by fire, and that the Post Office Department would be greatly embarrsased by a shortage of post cards, due to the loss of the Champion's mills, which supply the paper. Fortunately, the report turns out to have been greatly exaggerated. It is learned from the company's agents that only the coated mill was lost by fire. The paper mill was damaged by water, but to an extent only serious enough to delay operations for a week or two, and that meantime the more fortunate manufacturing friends of the company had come to its assistance, and arrangements had been completed to take care of the Champion's contracts until the necessary repairs are completed.

The waters of the Connecticut are subsiding, and at the present time the danger of further damage to the Holyoke mills and those in the district has evidently passed. There has, however, been a long list of damages, principally outside of Holyoke, which probably will take a little time to repair.

Throughout northern New York the floods have eclipsed all previous records, and caused the loss of many millions of dollars, according to the report. A number of paper mills have been closed down, but we do not hear of any specific cases of serious damage to the respective plants. It is reasonable to suppose that when the waters recede these mills will resume without further delay. The principal losses in this instance will be those resulting from finished stock, which has been ruined.

For a time there was considerable anxiety as to the fate of the mills on the Fox and Wolf Rivers of Wisconsin. But, while danger threatened, it went no further, and, according to Appleton reports, no damage has resulted. In fact, the flood has taught a lesson which may bear fruit in shape of a substantial water storage plan that may now be rushed through to completion.

One gratifying feature of the disaster has been the spontaneous show of whole-hearted sympathy that has gone forth to those stricken by their more fortunate competitors in business. The mills are helping each other out, and it will be contrary to all American record if the difficulties and general inconvenience do not disappear almost as rapidly as they originated.—Paper Trade Journal.

CONTRIBUTIONS TO PAPER TECHNOLOGY

The Influence of Soda Consumption and Time of Beating on Paper

By CLATON BEADLE and HENRY P. STEVENS

In the investigation of any fibre for service in the manufacture of paper the determination of the soda consumption is of primary importance. We generallly proceed first of all by boiling with excess of soda, say twice that which is likely to be consumed, when at the termination of the boiling, the soda consumed is estimated and a second boiling is carried out with the amount of soda found to be consumed in the first. If the material is now insufficiently boiled, a third boiling is made with 1-5 more soda than is contained in the previous one. This is likely to leave some soda in excess at the end of the boiling. If now the material in the third boiling is found to possess the requisite qualities in regard to beating, bleaching, etc., the amount of soda used in the third boiling is regarded as the commercial quantity. More frequently, however, a greater number

Soda Exhaustion on Boiling Cotton and Hedychium.

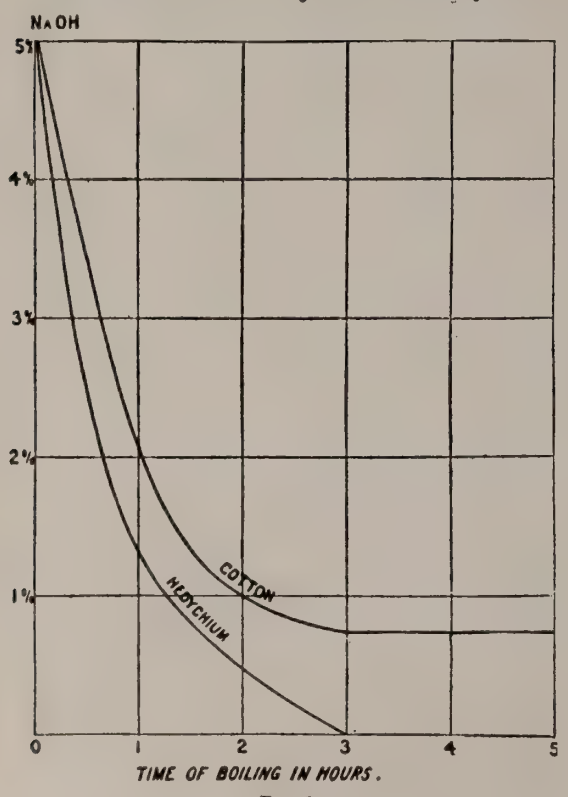


FIG. 1.

of boilings is required in which the conditions as to pressure, time, concentration of liquor and so forth are varied.

It is important, furthermore, to determine the soda consumption from hour to hour as the boiling progresses in order to ascertain how long the boiling should be continued. For this purpose we blow off every hour or every half-hour a sufficient amount of liquor, say, 100 cc., and determine the free and total soda, calculating the combined by difference and expressing the combined as a percentage of the total. The free soda can be sufficiently accurately estimated by carefully titrating the liquor with normal sulphuric or hydrochloric acid, transferring drops periodically to neutral litmus paper made with specially sized paper. As the liquor is frequently intensely colored, the effect on the litmus paper is observed after flicking off the drop. The total soda is merely determined by incineration and titration in the presence of methyl orange.

In order to check the accuracy of our methods we have evaporated liquors to the consistency of a thick dough and proceeded with the examination of this mass on the lines of ordinary soap analysis which gives for the free and combined soda almost identical figures with those obtained, as above, with the original dilute liquors.

To save time, one can merely determine the free alkali and, knowing the soda and the volume of the liquor originally added, calculate the combined. This, however, is only approximately accurate on account of the fact that the free mother liquor which drains from, or is blown off from, the boiled material is of a different concentration from that which is soaked up by, and remains in close contact with it. This is due to the fact that there is an absorption of the alkali by the material. The same absorption is found to take place on the mercerisation of cotton when the mother liquor draining or pressed from the mercerized mass is found to be of less strength than that which remains in close contact with the cotton. It also takes place, as we have recently demonstrated, when monofils of regenerated cellulose are exposed to caustic soda solutions in the cold in dilutions between 1 and 6 per cent NaOH and for greater concentrations if the solution is raised in temperature.

In laboratory investigations the best way of obviating this difficulty is to wash out the whole of the liquor at the end of the boiling, make up to a given volume, determine the free and combined soda and calculate to weight of raw material under treatment. In large scale operations, where this is not possible, we determine the free and combined soda in the mother liquor and, knowing the percentage of soda added in the first instance on the weight of raw fibre treated, we calculate the free and combined as a percentage on the raw fibre. Some fibres, such as cotton, linen rags and esparto, are treated so as to purposely contain an excess of soda at the end of the boiling. Others, such as hedychium (which is typical of the manila) class, is required to contain no free soda. Fig. 1 shows two average soda exhaustion curves, in one case for boiling cotton rags, and the other for hedychium.

It is generally known that the greater the amount of soda employed, i.e., the more drastic the treatment, the lower the yield. Sutermeister has, as the result of a large number of determinations, established a relationship between the yield and the soda consumption of spruce and poplar.

In order to ascertain whether similar results are to be obtained when treating other materials, we have taken the results obtained with hedychium and plotted a curve (Fig. 2) with the abcissae as yield and the ordinates as soda consumption, against which, on the same figure, we have given Sutermeister's curve for spruce.

It will be observed, on comparing the two, that the curves are very similar. We have in the case of spruce a critical soda consumption of 15 per cent. and for hedychium 5 per cent. At 5 per cent. hedychium is sufficiently boiled for the production of commercial papers and above this percentage of consumption there is no benefit. It will be observed in both cases that there is a curve up to the critical soda consumption

Hedychium.—Comparing the Soda Consumption, during Boiling, with the yield of unbleached Pulp produced.

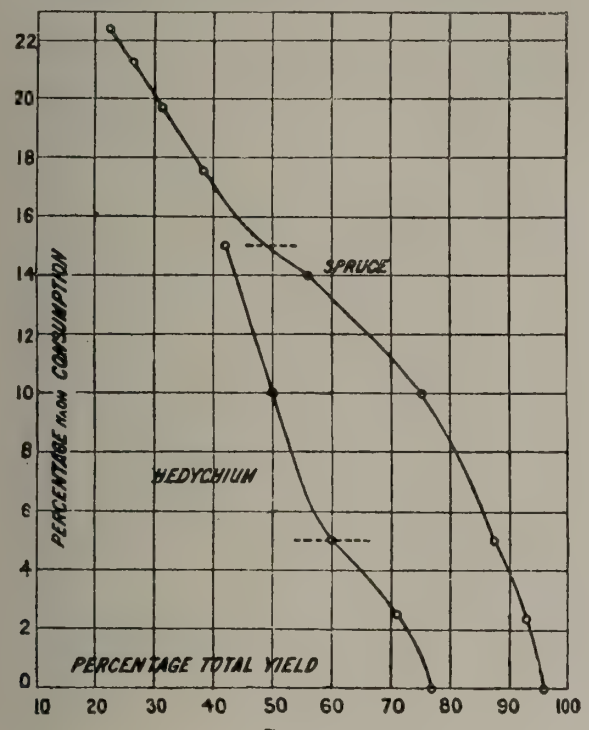


Fig. 2.

above which there is a straight line. From the critical point upwards in both cases the loss per unit of soda consumption is a constant quantity. In the case of hedychium the average loss (0 to 15 per cent. NaOH) per unit of soda consumed is 1.66 and in the case of spruce the average (0 to 22 per cent. NaOH) is 3.25. Therefore the matter rendered soluble per unit of soda consumption is double in the case of the spruce as compared with that of hedychium with almost identical yields. We have varied the conditions of the boiling qua time, temperature, concentration and so forth, and we furthermore confirm the views of Sutermeister that the yield and, in a large measure also, the qualities of the produce obtained are dependent upon the soda consumption alone and are not influenced by the other conditions.

The Influence of Time of Beating Upon the Rate of Drainage from the Machine Wire of the Paper Machine.

The rate of drainage is conditioned in some way by the wetness of the stuff, and this again by the beating and previous chemical treatment. No two kinds of material behave alike in this respect, consequently the question of drainage requires the exercise of a good deal of ingenuity on the part of the papermaker. He is, however, materially assisted by many modern contrivances which promote the flow of the water with the assistance of gravitation and suction. The greater the amount of natural drainage, however, the better for the papermaker. Generally speaking, ceteris paribus, the more "free" the stuff, the more rapid the drainage or the "wetter" the stuff the slower the drainage.

For the purpose of determining the change in the "free" working of a raw material as the result of chemical treatment and quite apart from the subsequent beating, the following method has been devised and usefully employed. Taking the case of cotton, this is taken in the air dry state, pressed into loose wads 15 x 10 mm., weighing 0.1 gm. The wads are let fall from a certain height on to the surface of a column of water and by means of a stopwatch the length of time necessary for the stuff to pass through the surface is noted. A tall glass jar is used for the purpose and the surafce of the liquid kept on a level with the eye so that the operation can be carefully observed. The following figures are determined in the manner above cited:—

	Means of 4 tests.
Cotton wool(ordinary) more than	24 hrs.
Bleached but unboiled short-fibred cotton....	31.3 secs.
Cotton once boiled in 1 per cent. caustic soda.	12.3 secs.
Cotton once boiled in 2 per cent caustic soda.	5.7 secs.
Cotton boiled and bleached and boiled again.	4.0 secs.
Cotton after extraction with ether and alcohol.	0.5 secs.

Thus, raw cotton floats on the surface like a feather and properly purified cotton will sink through the surface in half a second.

The rate at which pulps are wetted, as indicated by the above method of testing, has some connection with the rate at which the free water drains away from a

Hedychium.—Showing the effect of time occupied in Beating upon the rates of drainage on the Paper Machine.

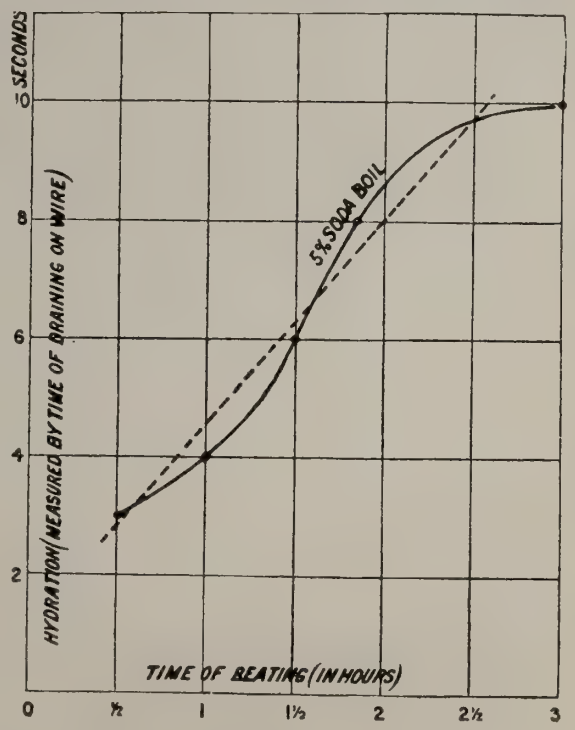


Fig. 3.

pulp. As the pulp passes on to the paper machine, it contains about 98 per cent. of water and 2 per cent. of fibre. A modern paper machine travels at the rate of 5 to 10 feet per second and the length of the machine wire is about 25 feet. Consequently, in order that the bulk of the free water may have passed off before the material reaches the suction boxes, it is necessary that it should drain away very rapidly. On the other hand,

too rapid drainage detracts from the felting qualities of the paper.

In order to ascertain what influence the time of beating had upon the rate of draining, we make determination with hedychium pulp, making tests at every half hour up to three hours' beating, the results of which are shown on the accompanying diagram.

These results seem to indicate a wavy line or S curve, but on the whole a fairly uniform rate of progression in the wetness and resistance to draining as measured in this way.

The Influence of Soda Consumption and Time of Beating on the Shrinkage of Paper.

The shrinkage of paper and what is known as the register of watermarks is largely controlled by the time occupied in beating as well as by the more or less drastic method employed in beating. It is, however, partly controlled by such means as tension put upon

Hedychium.—The influence of time of Beating upon the shrinkage of the Paper.

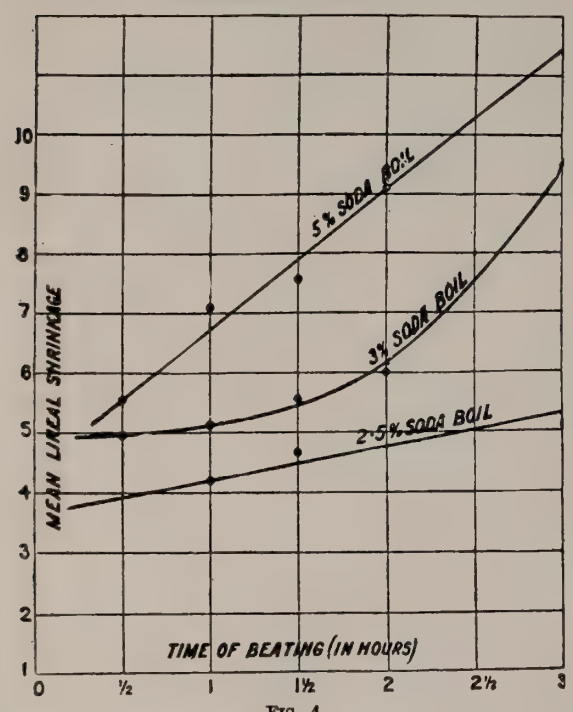


FIG. 4.

the web in the course of manufacture. Sometimes the register of a watermark, that is, its exact position in the sheet, is corrected by emptying into the stuff chest an additional engineful of stuff beaten either wetter or more free than the rest, according as to whether more or less shrinkage is required. In addition to the actual beating the amount of soda consumed in the boiling of the material prior to the beating is a determined factor. The diagram records the results of our tests with hedychium paper made at different stages of the beating.

For each stage in the beating a large number of observations were made and the average taken (at least 20 measurements in each case), and to eliminate the opposing effects of tension, the sheets were allowed to shrink freely while drying.

As will be seen from the diagram (Fig. 4) (the abcissa of which represents the time of beating in hours and the ordinate the lineal shrinkage on drying as a percentage of the wet length of the paper), the shrinkage is rendered greater by increasing the soda consumption as well as by prolonging the time of beating.

Measurements made on paper prepared from other materials led us to conclude that other papermaking materials behave in a similar way to that recorded for hedychium and that any differences that may exist between different materials are a matter of degree rather than of kind.

The Effects of Soda Consumption and Time of Beating Upon the Breaking Length and Bursting Strain of Paper.

The figures herein recorded in the case of breaking length represent the length of a strip of paper which, if suspended freely in still air from a great height, would just break with its own weight. The figures for bursting strain are expressed in pounds per square inch, as is the general custom in this country.

These two expressions, which are used commercially for indicating the strength of papers, do not vary in the same proportion and their relation to one another varies with different kinds and qualities of paper. For certain commercial purposes the breaking length is taken as the criterion whereas, with others, more importance is attached to the bursting strain. A close study of these two modes of expressing the strength of paper for the purpose of establishing any relationship between the two has never been made.

As furnished to the beater, the boiled material consists in the case of hedychium, manila and such fibres, of threads (i.e., fibrovascular bundles), the dry breaking length of which is about 60,000 metres and, as the average breaking length of a paper producible from this or any other strong fibre cannot be made to exceed about 10,000 metres, the fibre bundles have in the dry state about six times the maximum strength of a felted paper producible from the ultimate fibres composing the bundles.

On prolonged wetting in water alone, the breaking length of these threads is diminished by about one-half and to a lower figure when acted upon by soda, but this breaking length resumes more or less its original value when the material is dried again.

At the early stages of beating the threads are only in part reduced to the condition of ultimate fibres, the paper being of a very hairy nature, this hairiness diminishing as the beating proceeds. The hairiness at the incipient stages of beating is due to the presence of threads, i.e., fibrovascular bundles which in themselves possess a relatively high strength, as already explained. Hence it is that a fictitious strength is given to such paper. As the beating proceeds, the fibre bundles become separated into ultimate fibres and the paper has to rely more for its strength upon the felting qualities of these ultimate fibres as distinct from the fibre bundles. The felting qualities, which are comparatively low at the early stages, gradually increase with the beating. Hence, in the case of 5 per cent. soda (Fig. 5), with one and a half hour's beating where the hairiness is rapidly disappearing, but the felting strength is still low, the breaking length of the paper as indicated by the curve is much lower than at a somewhat earlier stage, e.g., after one hour's beating. These observations apply to properly boiled stuff in which 5 per cent. of soda has been consumed.

In the case of a much lower percentage of soda consumption, as when the boiling is incomplete, the circumstances are somewhat different. Here (with 2½ per cent. soda) the tenacity of the threads (fibre bundles) offers such resistance to the separation of the

ultimate fibres as to insure their hydration as rapidly as they become separated. This results in an increase of strength, the curve showing a continuous rise from the first half hour onwards, in place of a fall followed by a subsequent rise as when a 5 per cent. soda is used for boiling the material. In all cases, however, for equal times of beating it will be observed that the smaller amount of soda gives the lower breaking length.

As the bursting strain of paper varies with the thickness, it is important to note that the substance of the paper made in eeach case was 20 lb. Demy, equal to 74 Gm. per square metre, with a thickness of 0.10 Mm.

Turning to the bursting strain figures as indicated by the dotted line, it will be noticed in the case of 5 per cent. NaOH that after the first hour there is a diminution of breaking length but that the bursting strain

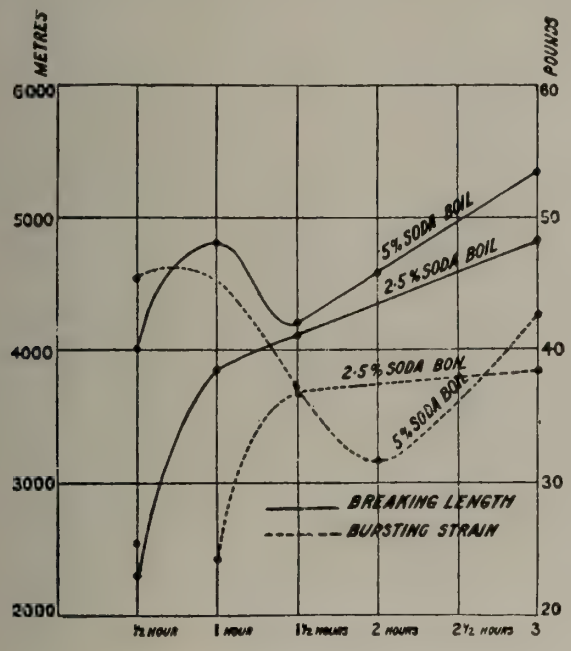


FIG. 5.

comes to a minimum at a later stage in the beating, that is, at about 2 hours instead of 1½ hours—that is, it lags behind the breaking length, after which it rapidly rises.

In the case of the 2½ per cent. soda consumption (i.e., incompletely boiled material), the bursting strain rises rapidly up to 1½ hours beating, after which, on further beating up to 3 hours, only a slight rise is noticed. In this case also the bursting strain follows and lags behind the breaking length.

These results indicate that there is some connection between bursting strain and breaking length.—Read before Society of Chemical Industry, Manchester, Eng., and published in Pulp and Paper Magazine with authors' compliments.

1913 DIRECTORY OF PAPER MAKERS.

The new Directory of the United Kingdom for 1913 is off the press. The information is authentic and full. Numerous new features are noticed over those of previous years, especially the division into two sections of water marks, and trade names (not actually water marks). It is indispensable to printers, stationers and paper buyers generally. Marchant Singer & Co., 47 St. Mary Ave., London, B.C. 40 cents, post paid.

C. J. BOOTH COMMENTS ON NEW TARIFF

(Special to the Pulp and Paper Magazine.)

Ottawa, April 14.—A quickening of exports and easier sales rather than greatly increased prices is the result predicted for the reduction of duties on lumber, newsprint and wood pulp by local lumber and paper men, commenting on the new United States tariff. These are about the only commodities the reduction on which will greatly affect Ottawa.

Mr. C. J. Booth, of the J. R. Booth firm, would not commit himself on the subject before the tariff went through. He has, however, expressed the opinion that as regards pulp and paper the reduction will not make so much difference as might be expected. The situation is much the same as with lumber. The demand from the United States, where paper making facilities are not so good as they are here, has always been good and the Booth firm has already invaded the Chicago news print markets, having signed up contracts there early in the year.

One effect of the free print paper clause, however, which the recent announcement of President P. T. Dodge, of the International Paper Company, places almost in the light of a certainty, will be the possible removal of United States paper plants to this side. In view of its splendid waterpowers and the large pulp wood district to which it has access, it is thought that Ottawa stands a good chance of securing some of the American mills whose owners decide to transfer to Canada. One local paper even announced authoritatively that the International Paper Company had bought an interest in the waterpower at Chelsea, Que., near here, but this has been denied by Mr. W. C. Hughson, a member of the firm of Gilmour & Hughson, which owns the power in question.

That the United States companies may well come here, however, is believed by local paper men. "I think it is quite within the range of probability that the Americans will do as they say and remove to this side," said Mr. C. J. Booth. "I notice that Mr. Dodge's statement speaks of inducements offered by the Canadian Government. I think that must be a mistake. The only inducement the Canadian Government could offer would be a reduction in the custom dues on paper making machinery, on which we now pay 27½ per cent. when we import it from the United States. Any other inducement than this would be objected to, I should think, by Canadian companies."—Mac.

CHEAP POWER FOR RITCHIE AND RAMSAY'S NEW COATED MILLS.

When the town of Trenton gave up their riparian rights to the power company they did so under an agreement that power was to be sold to them at cost, and that they should have first call on 15,000 horse power. No sooner was the first dam finished within the town than industries started coming in.

Power in blocks of one hundred horse power or more is sold as low as $12 per horse power for 24-hour service.

The newest industry coming to the town is Ritchie and Ramsay's coated paper mills, in which they will employ one hundred and fifty people.

PEAT FOR PAPERMAKING

A report on the Investigation of Peat Bogs and the Peat Industry of Canada is off the press by A. Anrep, the peat expert of the Dominion Government. Dealing with peat as a papermaking material, the report quotes from a report of Emil Hazulund as follows:

The question of manufacturing paper out of peat, especially out of unhumified sphagnum moss, has been raised many times. The inquiry has usually ended, however, with some small experiments. Scientific men in the paper industry do not seem to have had very much confidence in the results of these experiments; and this lack of confidence as will be shown was well founded.

The consistency of peat is such that, it cannot be expected to make strong and durable paper without the employment in its manufacture of complicated and extensive machinery necessary for the cleaning, bleaching and drying of the peat. This makes the finished product so expensive that it can hardly compete with the prices of the material now on the market.

At the Mosskulturforeining (Swedish Peat Society) museum is to be found a considerable collection of peat paper samples from different places. Some time ago several samples made from Irish peat were added. Comparison of these samples with those previously collected, caused an investigation to be made; to ascertain if they were made of peat.

Some of the tests of the strength of paper hereafter mentioned have been made according to the American standard by Engineer A. Skeppstedt at the Munksjo paper works—to whom I am indebted, and have to thank, for valuable written information. Several historical abstracts concerning foreign manufacturing have been taken from "Osterr Moorzeitschrift." Herr Schreiber for many years gave short accounts of the different paper manufacturing firms and processes. Careful note was made of the length of time each firm lasted before going into bankruptcy, and of the losses entailed in each case.

(I) Pasteboard, manufactured at the Munksjo paper works in 1890, for experimental purposes, proved to be very loose, slightly glazed, thin, and golden brown in color, with dark stripes. Thinner paper was also produced. It had a tensile strength of about 15 English pounds, weighed 190 grams per square meter, and was 0.32 mm. thick.

Microscopic investigations. The main part of the material consists of unhumified perfectly hyaline (glass-like) sphagnum moss. The leaves are unfractured, and show, occasionally, distinct pores; but with a dissolved glass-clear substance. The stems are often quite long, and extend right across the field of view at 80 times enlargement. The woody texture in these is whole, but the bark may be lacking. However, there is to be found perfect bark structures with distinct retort shaped absorption cells.

Eriophorum vaginatum appears in dark strips up to 1 centimetre long, 0.1-0.8 mm. wide. This, at the enlargement seems to consist of bast elements from leaf sheaths. It is also found with brown striped bast threads, and between these hyaline (glass-like) epidermis cells; fine roots of carex occasionally occur. Fibres of spruce, sphagnum spores, and spruce pollen, are found in small quantities.

It can readily be seen that pasteboard of the above quality cannot possess much strength. The leaves and stems of the sphagnum mosses contain very little of the thread or bast elements which are required for manufacturing paper. The filtering capacity of the leaves is extremely small, and decreases as they disintegrate. Even the stems which contain wood substance have a small quantity of fibre. The wood substance is composed of only a few cells and thick layers of weak and short wood cells with little substance. Inwardly the stem assumes the texture of pith and outwardly of bark (airbags).

The binding elements in this case are the added wooden substances and eriophorum, while the sphagnum can only be considered as a filler, and as such, it is for most purposes unsuitable.

(II) Pasteboard from Lindefor's paper factory is almost straw-color and consists of different thicknesses —from 0.39 mm. to over 2.0 mm. The weight of the first-mentioned thickness is 300 grams per square meter and contains, according to the statements issued by the factory, 40 per cent. sphagnum moss and 60 per cent. woody substance.

The sphagnum moss consists mostly of absolutely unhumified hyaline leaves of different varieties, with a small amount of stems. These retain the bark-texture while the leaves are generally whole. Eriophorum vaginatum is less frequent.

As in the previous case, the sphagnum moss is little disintegrated, but on account of the large quantity of added wood fibres, it possesses greater strength. It is impossible to see the peat in the pasteboard with the naked eye; this can be distinguished only after microscopic investigation. It is noteworthy that the paper is of a light yellow color; foreign peat paper is always of a dark color.

It may seem from the above data that the results of these tests were successful. However, owing to the great capacity which peat has for absorbing water, and the great expense entailed in removing the same, the experiments were not continued. This pasteboard was manufactured according to Dr. Beddie's patent in Berlin.

The process is as follows: the raw peat is cleaned, first by mixing it in the machine with a weak solution of alcohol for removing the humus substance; it is then disintegrated in specially constructed machines and finally in most cases bleached. The bleaching process, it is claimed, is very difficult and costly—much more so than in the case of wood fibre. Hence it has been shown that Sphagnum moss, even with the addition of a large amount of wood fibre, can not be used economically in the manufacture of paper.

Pasteboard manufactured by Engineer Ludwig Franz in Admont, Steiermark, is of a dark, grey-brown color, and is of several thicknesses. The thinnest quality had a tensile strength of 40 English pounds, weighed 400 grams per square metre, and was 0.54 mm. thick. Pasteboard 2.05 mm. thick had a tensile strength of 130 English pounds.

A. Cardboard: The surface is covered with minute fibres, which are not visible to the naked eye. The quantity of peat added is, in comparison, the same as in the Lindefors pasteboard. However, the Austrian sphagnum moss is more uneven than the Swedish; it is more humified and contains other kinds of peat residue, Eriophorum Vaginatum heather, and different kinds of carex. It seems that manufacturing was continued longer, which may be seen partly from the appearance of the cardboard and from the microscopic structure. Sphagnum leaves, humified to a certain degree, occur in smaller parts; unhumified pieces are often whole and

hyaline (glass-like); the stems are very short and in many instances I have found the bark structure unfractured, the spirals of the absorption cells may also be very clearly noticed and even the spores of the sphagnum moss are well preserved.

Eriophorum occurs in considerable amount and occasionally may be found as single fibres, but more often several fibres are gathered together in a flat, comparatively wide streak. Between the firbes occur parts of hyaline, epidermic, wave-shaped cell walls. The impurities found, consist of leaves of golden maidenhair, "Polytrichum commune," Jungermannia and some bark cells of heather, "Colluna vulgaris"; carex is found in the form of single, fine root branches. The fibres are composed chiefly of spruce and fragments of bark of the same plants are to be found. The fibres are bedded in pulp consisting of pith particles.

The sphagnum moss may also in this case be considered only as a filler, while the remaining peat substances, as for instance, eriophorum, heather, and carex, contain more or less of fibrous material, which contributes to the strength of the paper. Lumps without structure may be noticed, which, no doubt, originate from peat. These have no value, only making the paper dark and rendering the bleaching more difficult.

B. Pasteboard from the same place seems to be of the same composition as the above, the difference being so little that it is not worth while referring to it.

In 1902 a banker—Mr. Jellinks—and a few others started to manufacture paper at the factory in Admont, situated high up in the Steiermarks Alps. At the beginning the work was performed in an honorable manner, but later on it was in operation only when the shareholders were expected to visit the plant. In 1904 it ended disastrously and the bank lost over a million kronor (1 krona equals 27 cents).

In 1907 Engineer Ludo Franz started the operations anew, but shortly after he also was obliged to give up.

The situation of the factory was unfortunately chosen. The bog contained too little eriophorum peat. It was calculated that the wasted peat could be used as fuel, but on account of the heavy rainfall the drying was not successful. Lignite also proved to be an expensive fuel, but it was cheaper than using peat, even the peat litter factory employed lignite as fuel.

Thin paper, manufactured in October, 1897, by the firm, Karl A. Zschorner & Company, Vienna, contained, according to printed statements, 75 per cent. of peat. It had a tensile strength of 10 English pounds, had a weight of 105 grams per metre, and was 0.13 mm. thick.

The quantity of sphagnum moss is considerable, leaves mainly occur, which are usually disintegrated and dark in color. It may be noticed that the peat has not been fully humified; the particles of stems are rare, and when found the layer of bark structure is lacking.

Eriophorum occurs in a considerable amount. It is found partly as hyaline, epidermic, wavy-shaped cell walls, partly flat and sometimes in strips. The fibres are of a brownish color, and when enlarged 80 times it may be noticed that they are of a spiral shape and striped in a longitudinal direction with plainly visible cell walls at the ends.

The additional wooden substance is stated to be 25 per cent., but it seems to vary in different samples, sometimes being more. An inconsiderable quantity of pine and spruce pollen, heather-bark, leaves of mosses, and single, fine roots of carex is to be found.

Some of the paper is colored in different shades; reddish, blue-grey, brown and yellow-brown; the two first mentioned colors have been exposed to daylight (not sun) which made them fade on the outside.

Concerning the strength, it is, as mentioned above, only 10 English pounds, while the Munksjo pasteboard of the same weight has a strength of 60-65 English pounds. It is doubtful for what purpose this paper could be employed, as it is unsuitable for wrapping paper.

Zschorner started his manufacturing in 1895. He and two other manufacturers exhibited samples of peat paper at the World's Exhibition in Paris. Shortly after the firm became bankrupt and the two other manufacturers also failed during the same year.

Finally, I have also investigated a paper of English manufacture. The samples received here consisted of a series of postcards, partly colored and partly autotyped. The paper is loose and of the same grey-brown color as the Admont paper. For this reason, the heading stating that the paper was manufactured from the old Irish soil from peat out of the Allan bog, could easily be believed. However, despite several investigations made by me, I was unable to find any peat substance in the paper. Usually all the samples from the other manufacturers contained considerable quantities of sphagnum moss, at least some vegetable substance was shown. Wooden and cotton fibres were principally found, consequently there is no peat, either as filler or fibre. If some of the dark, structureless lumps originate from intermixed peat, it could only add to the coloring of the paper; for the rest, the heading "Peat paper" is a fraud.

A short time ago Dr. Hallessy, of the Irish Geological Survey, stated in a letter to the Director, H. v. Feilizen, that the manufacture of peat paper was discontinued four years ago. This will explain why the addition of peat in the paper is doubtful.

FROM OTTAWA.

(Special to the Pulp and Paper Magazine.)

Ottawa, Ont., April 13.—Lumber and pulp and paper industries which have their plants in the city are very much interested in an agitation which has been commenced for the strict enforcement of the smoke nuisance by-law by the city. The matter has been taken up by the Board of Control, but nothing was done on account of the fear of some of its members that enforcement of the law would drive away industries.

Mr. W. C. Hughson, however, a member of the lumber firm of Gilmour & Hughson, has come forward with a statement to the effect that soft coal can be burned in factories or industries of any kind without creating a nuisance. This is done in his own mills at Hull, where a "Dutch oven" system is in use. This consists of a long, fire brick arch set over the grates and the reflection of the heat from the arch assists in burning all the small particles of carbon which otherwise would produce smoke. Various types of air inlets at the firing doors and at different parts of the furnace walls as well as steam jets have been tried with varying degrees of success.—Mac.

LORD NORTHCLIFFE OFFERS PRIZE.

Lord Northcliffe, owner of the famous mills in Newfoundland, in the London Daily Mail, offers a prize of £10,000 to the first person making a transatlantic flight in a waterplane for seventy-five continuous hours between any point in the United States, Canada or Newfoundland and any point in Great Britain or Ireland, either way, the contest open to all nationalities.

MR. JOHN R. BOOTH CELEBRATES HIS EIGHTY-SIXTH BIRTHDAY

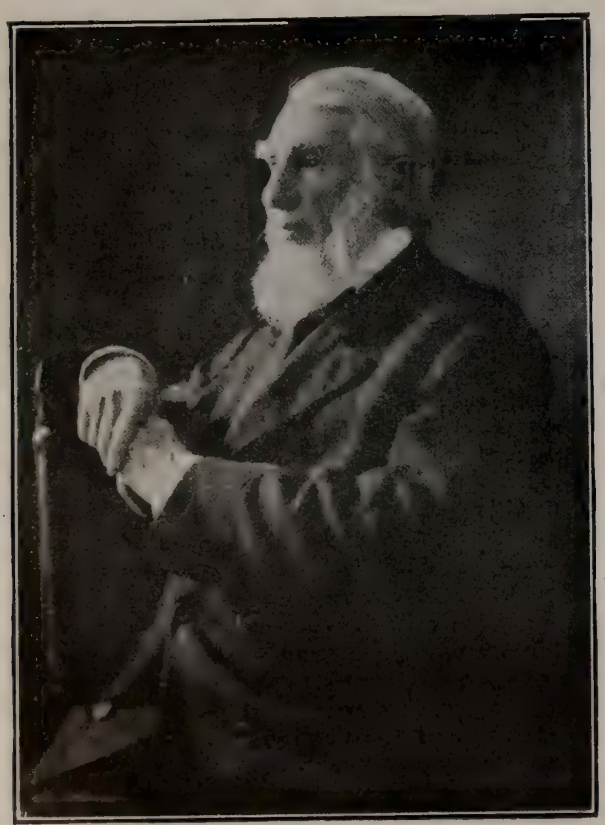
A Great Timber King

An Interesting Sketch of His Career

By JOHN MacCORMACK

[On April 5th, the veteran lumberman and paper maker of Ottawa celebrated his eighty-sixth anniversary. We take pleasure in giving a short sketch of his life.—Editor.]

Of all those whom reciprocity brought to the front probably there was no more unique a personality than that of John R. Booth, of Ottawa, emperor of the woods, monarch of the Upper Ottawa, a lumberjack who rode logs and lived to ride in his private car, a financier who commenced his career with nine dollars, and ended it a multi-millionaire, a laborer who learned



Mr. John R. Booth

to own railroads by helping to build them. This is the story of Booth, and it is worth the hearing now for its subject is a lumber monarch, and the day for such in Canada is passing. This is the day of the trust and combination, that sees the gradual vanishing of the old, picturesque figures who carved their fortunes out of the virgin soil and the substitution of an oligarchy of wealth. The age of the pioneer is slowly receding from the shores of the present, leaving giant industries, long lines of steel and thousands of miles of cleared land as its monuments.

Truly a Timber King.

John R. Booth is truly a timber king. A forest dominion of more than four thousand square miles is his. In Ontario, north into Quebec and to Burlington, in Vermont State, its boundaries extend. Straining horses guided by teamsters whose payroll is initialed J. R. Booth, draw Booth logs to Booth mills from where, shaped by whirring saws, they are shipped over a railroad built and formerly owned by the same great master-mind which controls all. In the industrial and financial world the name Booth is one to conjure with. The leaves of that same huge forest domain whisper it, it rings in the keen biting axes or in the sibilant screech of the hungry saws. Thousands of logs form it in manifold patterns on the surface of the Ottawa, while factory chimneys build it, in fantastic letters of wreathed smoke against the sky.

A king, in fact, is J. R. Booth, but a king without a court. He is both an absolute monarch and an absolute democrat. Owners of millions he habitually wears, if the weather be cool, a short, black coat that bears signs of intimate acquaintance with sun and rain and a dark fur cap or a suit of the same indefinitely dusky shade if it blows mild. If you seek him in business hours you will, like as not, find him in overalls. That is if you find him at all, for J. R. Booth is not an office man. He did not make his money polishing a hardwood chair nor does he find the operation necessary to keep it. Indoor affairs he leaves to his sons or trusts to members of his office executive; outdoor ones, even in their smallest details, he himself superintends. He rose early and worked late away back in the fifties when Ottawa was not even thought of as the Capital city. Sixty years later, though the frosts of over four score winters have silvered his brow, he does the same thing—up every morning at six o'clock, retiring at ten at night and putting in from twelve to fourteen hours of solid labor each day.

Short of stature and slightly stooped is Mr. Booth, as present generations know him. White hair and beard frame a square, granitic face, tanned by exposure and in which two bright blue eyes glitter keenly but not coldly. Of late years rather sparing in speech he has indulged in few reminiscences and given no autobiographies of his ascent up the rough hewn path of fortune. Interviewers who penetrate into the inner Booth sanctum and from there, directed by teamsters and waterboys, pick their way between piles of lumber or over heaps of sawdust to the short, sturdy figure, clad in rusty overalls and engaged in active superintendence of some construction process, generally retrace their steps carrying away perhaps a mental but not a pen picture why J. R. Booth, the one time lumberjack, has become a multimillionaire.

Early History of the Man.

But volunteers are not wanting who tell the early history of Booth. Of North of Ireland stock he came,

six brothers of the one family who left their native land for Shefford County, in Eastern Quebec. Where they settled afterwards arose the Village of Waterloo. In a small stone house less than half a mile away John R. Booth first saw the light of day and in Waterloo at this writing there are still many descendants of the race of Booth.

The early life of Mr. Booth was as that of many another farmer's son in the '30's. He chopped wood, drew water. He worked. Educational facilities in Waterloo were of the poorest, and poor as they were young Booth had little time to avail himself of them. In summer when there was much to be done he worked at home, only it was then euphoniously called "doing chores," and went to school. The net result of both was that he acquired the rudiments of an education and a hearty distaste for work that led to nothing. Young Booth liked to handle tools and frequently the people of his native place saw him gravely observing the workings of little wooden mills, manufactured by his own hands and merrily turned by the waters of a rivulet near his father's farm. Did the child perhaps in fancy dimly see the miniature realities replaced by huge turbines, did he substitute the Chaudiere's roaring kettle, foaming down between its wall of living rock on the Ottawa, for the purling current of the rivulet? Only J. R. Booth knew and J. R. Booth never said. But when the child that was become the man of twenty-one he left the farm.

Started with Nine Dollars.

"I can make more money elsewhere," he said, and that his neighbors deemed him foolish and spoke their thoughts troubled him not a whit. He saw the futility of the narrow round of toil, he knew that fortunes were to be and were being made and he felt he had the ability to make one. "I am going," he said, and he went. But not alone, for he took with him the wife of his choice and not unprovided, for he had a working capital of exactly nine dollars when he left his father's home to tempt fortune.

With his newly married wife, his working capital of nine dollars, some acquaintance and much ability with tools and an elastic capacity for work J. R. Booth went to Vermont and sought employment as a carpenter. For three years he was in the employ of the Central Vermont. He helped to build bridges and when they were finished he started on others. Needless to say the work he did was good work; he never turned out any other kind. It is doubtful if he ever could. But after three years of building bridges he was still building bridges and his working capital had not materially increased. He held a meeting of a committee of one and decided to quit it.

With added experience but none of the goods of this world J. R. Booth, having decided that helping to build bridges was not profitable, went to Ottawa. Still in his mind was the determination to do something, to be somebody. He intended to accumulate a fortune and that he had not yet accumulated and that he had not yet accumulated even an appreciable fraction of it troubled him no more than the freely volunteered opinions of his neighbors when he left home. It was in the year 1852. Ottawa had not answered to the name Bytown for some five odd years and was beginning to vizualize itself as the future capital. But as a city it lacked size. It had a few industries and had scarcely ceased to think the Rideau canal the greatest feat of engineering ever performed. On the Hull side of the Ottawa River conditions were much the same, but things were rather busier. Lumbering was being carried on though as yet on no great scale. E. B. Eddy had started in business and Levi Young and the Bronsons were cutting timber and laying the foundations of great fortunes. The Chaudiere contemptuously turned two small mills for Perley and Pattee and Philip Thompson, as yet undreaming of the day when the short, sturdy man whose keen blue eye roamed over its foaming expanse should tame it to its purpose. It seemed to be trying to terrify, deafen and dazzle him by its vast volume of gleaming water and the formidable clamor arising from its whirling gulf as it precipitated itself with incessant roaring over its vast rampart of rock. But to the mind of J. R. Booth there was suggested an analogy between the spectacle before him and the little rivulet that used to turn his whittled water-wheels in the old days back on the farm. He sought work in Hull.

Branching into Business.

The first job the future timber king secured was in a Hull machine shop, where he put a few finishing touches to his knowledge of tools. He helped build a sawmill and was appointed manager of it for a year. His first business venture followed sortly after and took the form of a machine shop which was, however, destroyed by fire after eight months. He next bought a mill and began to do business in it, installing two shingle machines. At the expiry of the first year the proprietor wished to double the rent. Mr. Booth said "No." He quit the mill and went to Ottawa. There, on the site of the huge structures he was afterwards to build, he found another sawmill, lying idle. The young millwright secured a lease of it for ten years and started on a small scale with a single saw. His first encouragement came in the shape of a contract for furnishing lumber for the Parliament Buildings. Ottawa had in 1855 been chosen as the capital and a legislative home was needed. The contract was awarded in competition with other bidders; Booth secured it and worked it out at a substantial profit. After three years' occupancy he purchased the sawmill. This was in 1860.

The name of Booth was now beginning to be heard. It stood for enterprise if not yet for great accomplishment. Its bearer was, for one thing, the first lumberman on the Ottawa to use horses in his timber operations. It was in connection with the Parliament Buildings' contract and is by no means the least of the interesting stories woven into the fabric of that structure. Hitherto lumbermen had used oxen to haul their timber to the water and they regarded young Booth's actions as not merely original, but foolish. To make matters worse a gang of longshoremen from Montreal formed the crew with which this doer of foolish things got his lumber out. Horses instead of oxen, sailors instead of lumberjacks; why the mere combination proved the man crazy; and yet oxen as a medium for getting out logs are now but a memory of the past, while the modern river cruiser, if he is not exactly a sailor, at least combines many of the qualities that distinguish the navigator of deeper waters.

Buying His First Timber Limit.

Just about this time Mr. Booth had a large stock of lumber on hand and a brisk demand spring up, he sold all he had. This gave him a good start. The bridge carpenter who had come to Ottawa ten years before with nine dollars now owned a mill and had rather

more than nine dollars to his name. But he had a greater asset still—his credit. That was good, and when several tracts of timber along the Ottawa, part of the estate of John Egan were offered for sale the Bank of British North America, with whom Booth had been doing a small business, advanced him what he asked for. With this he secured a large limit at $45,000, a fraction of its value, having previously sent his cousin, Robert, up the Madawaska to look it over. Robert Booth reported that it was worth many times the price it would likely command and thus J. R. Booth made his first big purchase, much as he made his succeeding one, after first finding out that it was worth buying.

The lumber operator's next step was to increase the capacity of his mill by putting in two gang saws. He used all that he had made and all he could get credit for in buying more timber limits, running largely into debt to do so. Time proved it a far-sighted policy. Fifty years later he was owner of more pine timber land than any other one person in the Dominion.

Frequently Mr. Booth found it necessary to add to his mill plant, and in 1892 he had 13 band saws and four gates in operation, with a capacity of more than one million feet in ten hours. In the month of May, 1894, this plant was destroyed by fire, entailing a serious loss to its owner and the citizens of Ottawa and Hull. Shortly afterwards he purchased an old mill adjoining the burned one and fitted it up with improved machinery. It is the largest lumber mill in the world, employs 1,600 men and runs day and night for seven months in the year. During the winter the force is reduced by half in the mills, the odd 800 men going to the woods to help get out the logs. J. R. Booth's large trade with the United States is supplied in great part through the mill and sorting yard at Burlington, Vt., and the sales office in Boston. He is the only Canadian lumber man who manufactures his own lumber in his own United States mill. It was in 1875 he built it. It has grown to include extensive lumber yards and woodworking factories covering an area of forty acres, with a box factory that consumes from 5,000,000 to 8,000,000 feet of lumber annually. It is, take it altogether, a large establishment even for the United States, though not so large as the one in Ottawa. It is also an evidence of the largeness of conception that was J. R. Booth's; he knew neither international limits nor natural boundaries.

If Mr. Booth's career was a record of success it was assuredly success in spite of obstacles. The great Ottawa fire of 1893, which destroyed the largest lumber mill in the world, was followed by the further disastrous conflagrations of 1900 and 1903 in which Mr. Booth lost millions of feet of lumber. Their effect, however, was not one of discouragement. The man of ordinary calibre might have followed such a reverse by a policy of retrenchment, but the Booth calibre was not of the ordinary gauge; he replaced his lumber piles and added a pulp and paper mill to his establishment, a mill capable of turning out daily some 80 tons of ground pulp. The fire of 1900 swept over the magnificent mansion of stone which he had built in Ottawa and left it a ruin of grey, bare walls. J. R. Booth built another. Through all his reverses he never asked any man or any government for financial assistance in any shape or form, neither did he enjoy such boons as tax exemptions or other concessions. When his planing mills in Burlington were destroyed in another baptism of flame he was offered ten years' exemption from taxation by the council of that town who did not wish to lose an important industry. They asked Mr. Booth to rebuild the mill and held out the exemption as an inducement. The mill was built, but the inducement was refused. Mr. Booth was not looking for municipal favors.

In the Railway Realm.

Although J. R. Booth will be chiefly remembered as a lumberman, for that he still is, in railroad circles his name will long remain a living thing. He railroaded just as he timbered, on a large scale. His early experience had brought with it a practical training for both, a training to which he added the indeterminable quality of his own personality. The result, in either case, spelt success.

It could scarcely be said of Booth that he went into railroading as wholeheartedly as he did of his own accord. He had always conceived himself a lumberman and had shaped his fortunes to fit that conception. He first became interested in the Canada Atlantic Railway more as an accommodation for its first founders than with any very definite idea in view. Governor Smith of Vermont and a number of capitalists had commenced the construction of the Canada Atlantic and had floundered into financial sinkholes in the process. They asked Booth for a helping hand. J. R. extended one hand only to find that the job needed two and an active brain to direct them. He must either lose what he had advanced as a loan or figuratively roll up his sleeves and get to work. Of course he did the latter. And the Canada Atlantic and Parry Sound, now part of the great G.T.R. system, stand as a monument to what J. R. Booth could do when he rolled up his sleeves.

When the Canada Atlantic and Parry Sound roads had been completed the Booth system of railways covered about 400 miles of main line and 100 miles of sidings. A vast new country was opened up by the Parry Sound line, great elevator and terminal facilities were built at Depot Harbor and the foundation was laid for the immense grain carrying trade that in turn furnished the major portion of the traffic of the railway itself. J. R. Booth not merely constructed, he created. True, he had no competition, but that was because there was at the time little to compete for. He had first to build his road and then develop the trade that was to furnish business for it. He built elevators, purchased steamships and bought wheat. The C.A.R., at first destined merely to be a feeder for the Central Vermont, became a self containing system of its own. Built in 1878 and followed in 1892 by the Parry Sound it was pre-eminently a freight carrying road, the line from Golden Lake to Depot Harbor running through a sparsely settled but densely wooded tract of country. Its passenger trade was therefore light, but as the medium of transit for much of the western grain and lumber its freight carrying capacity was taxed to the utmost. At the time of its purchase by the G.T.R. the Booth system handled annually over 200,000 tons of flour and package freight and 20,000,000 bushels of grain. By its construction the distance between Montreal and Chicago was shortened by over 800 miles and the distance between the latter point and Liverpool by 450 miles.

The excellence of the road and its equipment and the splendid facilities it offered as an outlet for western business were naturally not overlooked by the existing large railroad systems and rumors of sale were frequent. The line was sold by hearsay to the Grand Trunk, the Grand Trunk Pacific, to the Canadian Government to become a part of the Intercolonial, a dozen times each. The Conservative opposition scheme, op-

posed to the government plan, was to buy the Canada Atlantic, join it to the Intercolonial and give a part land, part water service to meet the West's growing demand for transportation. The Canadian Northern also wanted it as an outlet for its business in the West. Seward Webb, of New York, representing a number of other American capitalists, proposed to buy it and even secured an option for which he paid down $250,000. In 1904, when the road was finally sold to the G.T.R., Webb sued for his $250,000 and $2,000,000 damages. He secured neither and J. R. Booth, who chalked up $14,000,000 to his credit when the G.T.R. bought his road, had Seward Webb's quarter million for an additional nest egg.

Since the Grand Trunk bought out his interests in 1904 J. R. has taken no active interest in railway affairs except when something has gone wrong with the cars that carry the logs from his yard at the Chaudiere in Ottawa. That has happened but seldom and never for very long, not even during the Grand Trunk strike of a year ago, for there is but little use making excuses about the present and past performances of a railroad which your listener not only built, but knew all about before you were born.

Is Not a Politician.

J. R. Booth is not a politician. He has been too busy and perhaps too wise to seek to sustain such a role. On very few occasions has his voice been raised in the political arena, but never without effect. He broke the silence of years some few months ago with a denunciation of reciprocity with the United States. J. R. was not a politician, but neither, in his scheme of things,, was reciprocity politics . It was business and he was a business man. It was going to be a bad business too, so he told his workmen from woodpile tops for a few days preceding election; bad for them and bad for Canada. No fine flowers of oratory in these woodpile speeches, no rhetorical formalities, but words, simple, direct, practical words of two and even one syllable that might not be believed but could not but be

His Methods of Philanthropy.

Neither is the millionaire lumber king a philanthropist in the sense that John D. Rockefeller or the laird of Skibo are philanthropists. This does not mean that he gives not to the needy, but it does imply that his benefactions have secured him no contracts for free advertising in the daily press. His charities have gone deeper than the mere signing of cheques and found their records in the unspoken rather than in the written word. The mill employees of the Ottawa Valley could have told of the nature of the Booth charity, of a voluntary reduction in the length of the working day of his employees that was in time adopted as the standard all through Eastern Ontario by mill men.

It is told of Booth, the one-time laborer, that he came to entertain a king. If you asked George V. of England about it he might put aside the things of royalty for a little space to tell of how he once rode madly, tasting the copper-taste of excitement the while, through the lumber slides at Ottawa on a crib of squared timber, the guest of J. R. Booth and other Ottawa lumbermen. And of a dinner of pork and beans that followed and was partaken of in a log shanty built at Rockliffe for the occasion and still known as the Royal shanty, he might have told. It was the meeting of two men, one of whom heredity ad divinely appointed King of England and the other a timber king, appointed by himself.

FLAX STRAW FIBRE

Flax Decorticating Company Issues Stock to Finance Interesting Process.

The Flax Decorticating Company, Limited, incorporated under the laws of the Province of Manitoba, has an authorized capital of $500,000. The object of the company is to separate and extract the fibre from flax straw by purely mechanical means and without having to resort to what is commonly known as "pit retting" and "dew retting."

While the immediate object of the company is to extract from the large quantities of waste flax straw, now burnt throughout the Northwest Territory, the short but valuable fibre and dispose of it as a high-class raw material for paper pulp, the company's ultimate object will be to refine the extracted fibre and dispose of it for coarse textile purposes in a higher market. This latter can only be accomplished by educating the flax cultivator in his own interests to handle the original straw with greater care.

It is the intention of the company later to establish a plant for the manufacture of the waste or woody material into papier mache and beaver board. The profits to be derived therefrom are large, and are shown roughly on the last page of this prospectus.

It has been provided by a special by-law that after payment of the 6 per cent. dividend on preferred shares, and before any dividend on common stock shall be declared, a sum of $6,000 shall be placed to a reserve fund each year until a sum of $12,000,000 shall have been reached, and this sum is to be a reserve for the further securing of any dividend, which may from time to time become due on the preferential stock.

The president is W. H. McWilliams; vice-president, Andrew Kelly, Winnipeg; managing director, F. W. Allen; director, C. B. Mark, M.P.P., Rosetown, Sask.; secretary-treasurer, H. F. Forest.

The mills are located at Rosetown, Sask.

J. C. WILSON LTD. NEW BOND ISSUE

The J. C. Wilson Company, Limited, of Montreal, was founded by the late Mr. J. C. Wilson some forty-two years ago, and it has so grown that it is to-day one of the largest concerns of its kind in Canada. The company has paper mills at Lachute, which were constructed in 1880, but have since been enlarged until they have a capacity of six times the original production. The plant is equipped with modern machinery and is operated by water powers owned by the company. The company also possess pulp and ground wood mills at St. Jerome, and also a water power at this point capable of developing three times the amount of power required for present operations. In Montreal and Winnipeg they possess offices and warehouse buildings and other valuable real estate.

The company is now making an offering of $600,000 of first mortgage 6 per cent. 25-year sinking-fund gold bonds, at 100 and interest. Back of these bonds the company possesses total fixed assets of $1,600,000 and net current assets of $522,000 or total assets of over $2,128,000. The profits for the year 1912 were given at $205,000, equal to almost six times the annual bond interest. On the basis of last year's profits the company earns every three years an amount equal to the bond issue.

TALC

By R. P. D. GRAHAM, Assistant Professor of Mineralogy, McGill University

Historical.

The mineral to which the name talc is now given was known to the ancients many centuries ago, and in its more massive and compact form (steatite or soapstone) has been used from the earliest times, more especially by the Chinese, for ornamental purposes, owing to the ease with which it may be carved and polished.

The origin of the word talc is somewhat doubtful. Theophrastus describes a stone of silvery lustre, occurring in large masses, which can be easily cut or wrought, and this probably refers, in part, at least, to talc. He refers to this substance under the name of magnetis, and from this word has originated the modern magnesia, which is one of the principal constituents of talc. Agricola (1,546) gives talck as the German equivalent of magnetis, and, among other synonyms for the mineral, adds that of glimmer. The latter, however, is the modern German name for mica, and this early confusion between the two species, talc and mica, has persisted to the present day, the familiar mica lamp chimneys, for example, being frequently referred to popularly as talc. Another theory traces the origin of the name to an Arabic word, talk.

Steatite, the name given to the massive variety of talc, is derived from the word steatitis, a term used by Pliny in describing "a stone recembling fat." Soap, stone, an alternative name for steatite, is of comparatively modern origin, and refers to the soapy feel which is so characteristic of this substance.

Properties.

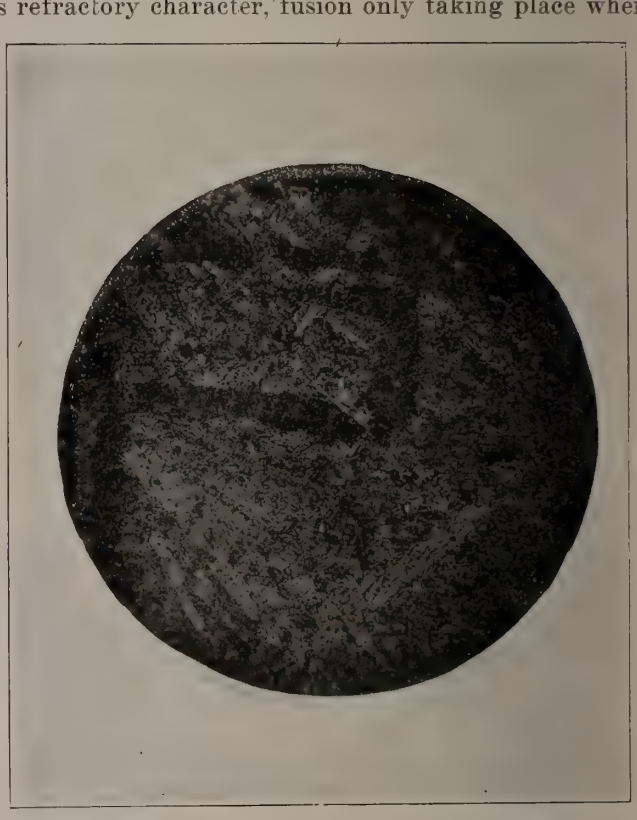
Talc is only very rarely found in distinct crystals; these are flat plates, with a rhombic or hexagonal outline, and they belong to the monoclinic system of crystallization. Most frequently the mineral is found in the form of foliated masses or talcose schists, composed of minute scales or fibres, and as these latter become ultra-microscopic in size the material takes on a massive finely granular to compact texture; it is to this latter variety that the name steatite is given. The crystalline varieties are usually light in color—white, grey or pale apple-green, while the compact material is more often dark bluish-grey or green, or some other color, due to impurities and to the presence of other minerals in a finely divided state, those most commonly found being chlorite, tremolite, mica, quartz and magnetite.

When seen in very thin slices under the microscope, the mineral is transparent, but in larger masses it appears opaque. It is one of the softest minerals known, being very easily marked by the finger nail, and in common with all such very soft minerals, it has a characteristic greasy or soapy feel; the massive compact varieties, are, as a rule, slightly harder. When the flakes of talc are sufficiently large, they are seen to have a very perfect cleavage in one direction, and it is probably this property more than any other which has led to the confusion with mica, which also possesses a highly perfect basal cleavage. However, the two species can be very easily distinguished if it is remembered that the cleavage flakes of mica are elastic, while those of talc are not—that is to say, although thin flakes of talc are highly flexible, they remain bent and do not fly back to their original position on releasing the pressure. The mineral usually has a pearly lustre, and the specific gravity varies between 2.6 and 2.8.

Chemically, talc is a basic silicate of magnesium, $H_2 Mg_3 (SiO_3)_4$, the theoretical percentage composition being SiO_2=63.5, MgO=31.7, H_2O= 4.8. As a rule analysis of the better grades approach very nearly to the above figures, but one or two per cent. of alumina may be present, as well as similar amounts of ferrous and ferric oxides, the presence of the latter in large quantity rendering the mineral unsuitable for such industries as papermaking. As indicated in the formula given above, the water is present as "water of constitution," and is not loosely held, as water of crystallization. For this reason the mineral only becomes dehydrated after being exposed to high temperatures, as will appear from the following figures:

Water lost at 105°C.=0.07%
300°C.=0.06%
red heat=4.43%

Two other important properties of the mineral are its refractory character, fusion only taking place when



Micro-photograph of thin section of talc from Madoc, Ont. Magnified 40 diameters, between crossed nicols. The Talc is seen to be made up of interlocking bladed crystals.

it is heated to a very high temperature; and its resistance to acids, in which it is practically insoluble. In the latter connecton it has been shown that talc, after being exposed to the action of dry hydrochloric acid gas at 400 deg. for 15 hours, experienced no loss in weight. The mineral is further a very poor conductor of both heat and electricity.

It may be mentioned that the properties of talc are so nearly identical with those of kaolin (and also pyrophyllite, which when it is found in sufficiently large quantities, as at Glendon, N. Car., is quarried and used for the same purposes as talc) that there is often some difficulty in distinguishing between these substances, especially when they are in a finely divided or powdered state. The most convenient test is to moisten the material with a drop of cobalt nitrate solution and heat strongly; kaolin and pyrophyllite, being aluminium

silicates, will, if treated in this way, yield a blue colored mass, while talc will assume a pink tint.

Origin of Talc.

Talc is a very widely distributed mineral, but deposits of sufficient size to be of economic value are comparatively rare; the more massive varieties, however, form beds of wide extent and considerable thickness in some regions.

It is a mineral of secondary origin, i.e., it is not an original constitutent of the rocks in which it occurs, or with which it is associated, but has been produced subsequently through the alteration of other minerals, for the most part anhydrous magnesian silicates such as chrysolite. $Mg_2\ SiO_4$, enstatite, $Mg\ SiO_3$, diopside, $Ca\ Mg\ (SiO_3)_2$ and tremolite, $Ca\ Mg_3\ (Si\ O_3)_4$. In this way deposits of talc may be produced under either of the following conditions:

(1) By the alteration of basic igneous rocks, i.e., rocks high in magnesium silicates; the steatite deposits of Virginia as well as some at least of those of the Eastern Townships are probably of this type.

(2) By the metamorphism of magnesian limestones; the New York occurrences, and also that at Madoc, Ontario, are of this kind.

The mode of origin of the talc at Madoc is described more particularly below.

The Madoc Talc Deposits.

In order to understand how the talc deposits near Madoc have originated, it will be necessary first to briefly review the geological history of the district. Anyone visiting the neighbourhood to-day will observe that the rocks which outcrop may be roughly classified under three heads. Firstly, there is a series of nearly white weathering limestone beds, which lie almost horizontally, and on examination are found to contain numerous fossils; these beds belong to what is known as the Trenton limestone. Then other rocks may be seen, obviously of a sedimentary character, and consisting like the above largely of limestone, but in which the beds or strata have an almost vertical attitude; to these the name Grenville series has been given. And, lastly, there are outcrops of a totally different kind of rock, which is not bedded but massive and crystalline, with usually a pale reddish weathering; this is an igneous rock, gravite, and it may occur in large batholithic masses covering wide areas, as the Huckleberry rocks, or as smaller dykes and stringers. A closer examination will show that the granite frequently breaks through the rocks of the Grenville series, whereas it is never found cutting across the beds of Trenton limestone; in fact, the latter may be seen in many places lying on top of the granite, which represents the actual sea floor upon which they were laid down as sediments. These facts at once show us that the Grenville series must be older than the granite, while the Trenton is younger or later.

Using these data as a foundation, we are now able to form some idea of the early geological history of the district. In pre-Cambrian times, this region in common with the greater part of the North American continent, was covered by the sea, and sediments were being laid down upon the sea bottom much as they are in the oceans of to-day, until finally beds of great aggregate thickness, and consisting largely of limestone, had accumulated. Then, either by the recession of the sea or the elevation of the land, these sedimentary rocks emerged to form dry land. At the same time, great masses of molten igneous material beneath the earth's surface forced their way up into these strata, which formed the then outer crust of the earth; the beds were thus subjected to considerable pressure which resulted in their being crumpled up and bent to such an extent that, instead of their original horizontal position, they attained a nearly vertical attitude. At some points the force was so great that the beds were not only folded up and bent, but actually split, in this way giving rise to faults and slip planes.

This igneous material is the granite we see to-day, and is commonly referred to as Laurentian; it did not, however, reach the surface at the time it broke into (or intruded) the Grenville limestones. It is exposed to-day in many places, as in the Huckleberry rocks, only because the great thickness of limestones, etc., which originally covered it have been subsequently removed, both by weathering and also by erosion, more especially by the great ice sheet which covered nearly the whole of Canada during the Glacial period, and which gave the rocks their present smooth, rounded surfaces. It will be clear from this that in many places where the rocks of the Grenville series are exposed at the surface to-day, it can be confidently asserted that the granite exists at no very great depth beneath them.

The folding of the strata was not the only change which the beds of the Grenville series underwent, however; the granite, as it forced its way up through them, was in a molten state and, therefore, at a high temperature, and this heat was communicated to the beds in its vicinity. The limestone and other beds were thus subjected to tremendous heat and pressure, and, as a consequence, were profoundly altered. The elastic or sedimentary character of the rocks disappeared, and they became crystalline, the new minerals developed depending mainly on the chemical composition of the beds. The change we are here most concerned with took place in certain siliceous strata of the limestone, which contained also a considerable percentage of magnesia (dolomitic limestone). Here, under favorable conditions, the process of re-crystallization gave rise to certain Ca-Mg-silicates, such as tremolite, formed by some such reaction as the following:

$$Ca\ CO_3+Mg\ CO_3+4\ SiO_2=Ca\ Mg_3\ (SiO_3)_4+4\ CO_2.$$

Subsequently, these anhydrous silicates have themselves undergone alteration, changing over into the basic silicate, talc. This change has been brought about by waters, whether descending or ascending is uncertain, but in all probability the latter, charged with carbon dioxide and probably acting along lines of weakness produced by faulting. The change which took place consisted essentially in the replacement of the lime by water, and may be indicated by the following equation:

$$Ca\ Mg_3\ (SiO_3)_4+H_2O+CO_2=H_2Mg_3\ (SiO_3)_4+Ca\ CO_3.$$

Thin sections of the talc examined under the microscope bear out this view as to its mode of origin. They are seen to be made up of a network of interlocking long-bladed crystals, now composed of talc; these, however, are plainly pseudomorphs, i.e., the needles were originally some other mineral, which has been completely replaced by talc without changing the external form of the crystal. In the case of the Madoc talc, the mineral so replaced was largely, if not altogether, tremolite. This mineral nearly always occurs in long-bladed or needle-like crystals, and the fibrous character of the talc from this locality is no doubt largely due to its having had tremolite as its parent mineral.

To sum up the above facts briefly, we have seen that the talc occurs in nearly vertical "beds," interstrativille series (of pre-Cambrian age). Its presence is to be accounted for by two primary causes:

(1) The rocks of the Grenville series were highly altered, or metamorphosed, as a result of the great heat fied with the limestones and other rocks of the Grenand pressure to which they were subjected when intruded by the Laurentian granite. This has resulted in their re-crystallization, and, where the beds were of silicious magnesian limestone, in the local development especially of tremolite.

(2) Under favorable conditions, waters charged with carbon dioxide percolating through the rocks, probably along slip-planes or lines of faulting, have replaced the tremolite by talc.

The Madoc talc is white in color, very soft and free from grit; it usually occurs in the form of a somewhat massive talcose schist.

Production of Talc in Canada.

Talc occurs sparingly at many localities in Canada, chiefly in Ontario and Quebec, and 50 tons of the mineral were quarried as early as 1886. From then until 1906 there was a production of a few hundred tons annually in Canada, but since that date the output, which has all been derived from the Gillespie mine at Madoc, has increased rapidly. The following particulars relating to the annual production of talc in Canada are taken from the Annual Report on the Mineral Production, issued by the Department of Mines:

	Tons.	Value.
1909	4,350	$10,300
1910	7,112	22,308
1911	7,300	22,100
1912 (estimated)	8,270	23,132

In the early days of the mine, the crude talc was all sent to the United States for treatment, but since the erection of the Gillespie mill at Madoc some years ago, the product has been ground and prepared for the market on the spot. Most of the finished material now finds a market in Canada, the paper trade accounting for a large proportion of it.

Uses of Talc.

Talc in various forms is put to many and diverse uses in the arts, and these depend mainly on the following properties of the mineral: its softness, soapy character, fibrous structure and flexibility; the fact that it is not acted on by acids, is only fusible at a very high temperature, and is a poor conductor of heat and electricity; and, further, the comparative toughness of the compact varieties.

Its principal applications are as follows:

Talc.

Paper making, as a loading material or filler; for this purpose it is to some extent replacing kaolin (china clay) over which it has certain advantages. The talc should be fibrous, and free from iron and grit.

Wallpaper—powdered talc is sometimes used instead of mica for imparting lustre to wallpapers.

Wall plaster, toilet powders, as a soap adulterant, for dressing leather and skins, for sizing cotton cloth, as a base for lubricants and fireproof paints, in the manufacture of dynamite, as a non-conducting covering for boilers, steam pipes, etc.

M. & O. POWER COMPANY

Lewis F. Houpt, president of the George Irish Paper Company, of Buffalo, N.Y., has recently been elected vice-president of the Minnesota and Ontario Power Company, and appointed general manager of their pulp and paper manufacturing interests at International Falls, Minn., and Fort Frances, Ont.

Charles E. Duncan, who for the past three years has been manager of sales of the Marathon Paper Mills Company at Rothschild, Wis., has resigned to accept a position as director in charge of sales of the Minnesota and Ontario Power Company's mills located at International Falls, Minn., and Fort Frances, Ont., with sales offices in the Andrus Building, Minneapolis.

Mr. Duncan's wide experience in the paper business particularly fits him for handling a proposition of this sort. His wide acquaintance, and the successful way in which he has handled the product of the other mills with which he has been connected insures the Minnesota and Ontario Power Company the most efficient results in the handling of such an enormous daily tonnage.

The Minnesota and Ontario Power Company is now producing 225 tons of news print paper per day at International Falls, and its mills at Fort Frances, Ont., now in course of construction, will produce about 125 tons per day. The new mill will be in operation the latter part of this year.

The company's engineers are now at work on plans for the construction of a 50-ton kraft mill and a 50-ton soda pulp plant, the product of which it expects to manufacture into book paper.

These new additions will mean an expenditure of over $2,500,000. As soon as these mills are completed additional units will be added until the total daily capacity of the Minnesota and Ontario Power plants will reach 650 tons of the various grades of paper. This will make it the largest individual paper producing company in the world, and when completed will represent an investment of approximately $20,000,000.

In making these additions and bringing the total daily capacity up to 650 tons, the company is merely carrying out the plan laid out some time ago by E. W. Backus, of Minneapolis, Minn., president of the Minnesota and Ontario Power Company, who has made this possible by the development of water power, and the securing of timberlands necessary to insure a continuous supply of raw material. The company's supply of spruce and poplar necessary for the manufacture of both mechanical and chemical pulp is practically unlimited, and is reached by the railroads owned and operated by itself.

RECIPROCITY IS AUSTRALIA'S CRY.

Referring to the forthcoming conference between Canada, Australia and New Zealand, the Sydney Herald says that for some time a feeling in favor of inter-Dominion reciprocity has been gaining ground. The Commonwealth would be glad to learn that some tangible step had been taken to bring about that achievement.

It is hoped that the parties will arrive at some scheme which will recognize the membership of the Dominions in one Empire, and will involve the interest of all as a community.

Work on the new plant of the Donnacona Paper Co. of Donnacona, Que., is being rushed, and it is expected that the mill will be in operation by January next, with an output of about sixty tons of news print daily.

ABITIBI PULP AND PAPER CO., LIMITED

Abitibi Pulp & Paper Company, Limited, has been organized for the purpose of constructing and operating pulp and paper mills at Iroquois Falls, in Northern Ontario. The company possesses all the requisites of a successful and profitable pulp and paper manufacturing industry. The directors and officers are imbued with the firmest confidence in the merits of the enterprise



F. H. Anson, President

and with a determination to make it successful. The best available engineering talent was engaged for the preparation of drawings, plans and specifications for and oversight over water power development, mill construction and equipment. An experienced and capable manager, Mr. Wm. Whyte, has been appointed. An abundant supply of pulp wood deliverable at minimum cost at the mills is assured. Water power privileges adequate for not only contemplated and possible requirements of the company, but also for other industrial and commercial enterprises vested in the company can be developed at a very low cost. Favorable freight tariffs have been arranged.

Location and Extent of the Company's Properties.

The pulp limits, water powers and mills of the company are within the territory surrounding Upper and Lower Abitibi Lakes and along the course of Abitibi River and its tributaries in the District of Temiskaming in the Province of Ontario. This district, lying south of the forty-ninth parallel of latitude, which constitutes the southern boundary of the Province of Manitoba, forms part of the fertile clay belt of Northern Ontario, and is at present served by two lines of railway: the National Transcontinental and the Temiskaming and Northern Ontario. The limits are traversed east and west by the line of the National Transcontinental Railway a distance of fifty-four miles from a point sixteen miles east of the town of Cochrane to the interprovincial boundary between Ontario and Quebec. The line of the Temiskaming and Northern Ontario Railway, running north and south, is within a few miles of the western boundary of the limits. A branch line of this latter railway of about six miles in length, will be completed during the summer of 1913 from Iroquois Falls Junction to the location of the mills and townsite of the company at Iroquois Falls in the township of Teefy. Other lines of railway are projected to which the company's properties will be tributary. As a location for pulp and paper mills, Iroquois Falls is ideal.

The area embraced within the pulp limits is 1,560 square miles, or about 1,000,000 acres. The distance by water from Lake Abitibi to Iroquois Falls is approximately forty miles, and in this distance on the course of Abitiba River there are three excellent water powers, Couchiching, Twin and Iroquois Falls, capable of developing a total of over 50,000 horse power. At Iroquois Falls, five hundred acres of land have been reserved for mill site and water power development. Many military veteran land grants in the neighborhood have been purchased and others are being secured. These will be prepared for settlement, the value of the wood exceeding the whole cost.

Pulp Wood Supply.

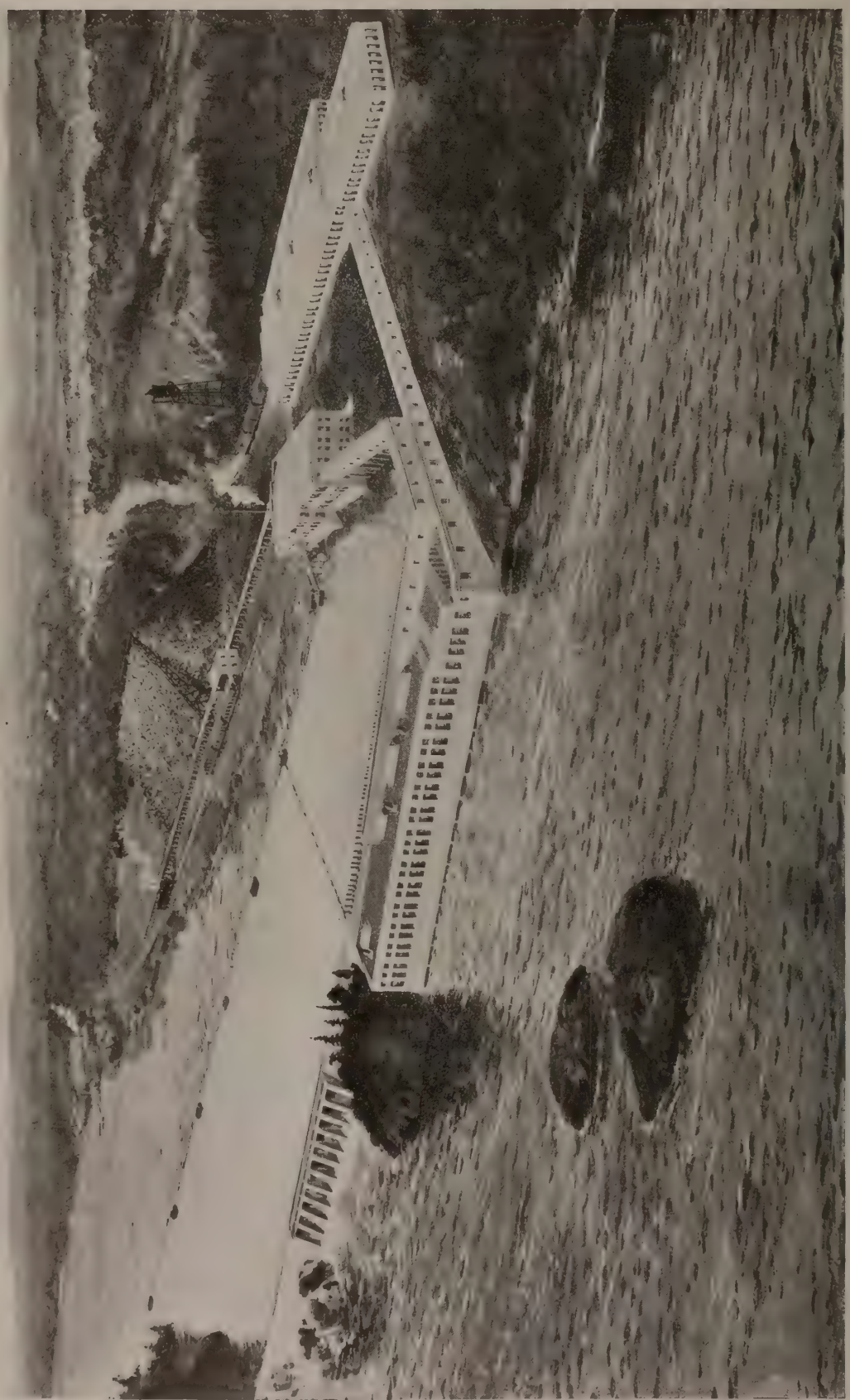
The Abitibi pulp limit is held by the company under an Ontario Government concession, with terms and conditions similar to those granted to other pulp and paper companies in the province.



Shirley Ogilvy, Vice-President and Treasurer

There are upon the limit millions of cords of pulp wood, principally spruce of the best quality for pulp and paper manufacture. The entire territory is well watered and can be most economically logged.

The close proximity of the standing timber to the mills, good driving streams, and the extremely short drive (less than two weeks) required for delivery of the timber from any part of the limit to the mills, and the ease and cheapness with which supplies can be taken into the lumbering camps, enable the company to de-



Abitibi Pulp and Paper Co., Limited. Ground Wood Installation

liver its wood at the mills at a very low cost, lower, in fact, than any other pulp company in Canada. The important element of labor in lumbering operations will be provided for, as the opportunity for winter employment for themselves and their horses will attract and be a boon to settlers, many of whom are taking up land in the fertile Northern Clay Belt. Agriculture, dairy and other products will be obtainable from the settlers. In addition to the practically inexhaustible supply upon the company's limit, the pulp wood cut by settlers in clearing their lands is available to the company.

The Black River district, directly tributary to the mills at Iroquois Falls and embracing a well-timbered area of about three thousand square miles, is open for settlement. Pulp wood cut by settlers in this district can be cheaply floated to the company's mills. Sufficient settlers' wood can be obtained to operate the company's mills at their full capacity for an extended period. The importance of this source of supply of raw material is increased by the fact that pulp and paper manufactured therefrom is admitted into the United States free of duty.

Water Power Privileges and Development.

A thorough investigation of the company's water powers has been made by Messrs. Holgate and Hardy. The reports amply justify the claim that the water power privileges owned by the company are a most valuable asset and assure sufficient power to meet, not only the company's present and future requirements, but also the demand which undoubtedly will arise for electrical energy for use in other industrial and commercial enterprises within the district. Natural conditions are such at the three powers at Couchiching, Twin and Iroquois Falls, that the cost of development will be exceptionally low. An initial development of 21,500 horse power is being made at Iroquois Falls, the most conveniently located of the three powers. Plans of this development, as also of the building and incidental structures for a mechanical pulp mill of 180 tons daily capacity being built at this time and for a paper mill to be built in the future, have been prepared. The main dam from its junction with the power house at the northern end to the south side of the river is being built according to plans and specifications and under the supervision of Mr. Henry Holgate, of Montreal, and the power house and mill structures according to plans and specifications and under the supervision of Mr. George F. Hardy, of New York. Further hydro-electric development at Iroquois Falls as also at Twin and Couchiching Falls will be undertaken as occasion requires. In the meantime a regulating and controlling dam is being constructed at the head of Couchiching Falls. This dam will contain the permanent regulating works for the control of the discharge from the Abitibi Lakes and will ensure a permanent equable flow and enable the company to develop at the three falls over 50,000 horse power, available the entire year.

Mill Construction and Equipment.

For a time the company's enterprise will be limited to the manufacture of mechanical ground wood pulp, but it is the intention ultimately, and within a period governed by market conditions, to erect and equip modern sulphite and paper mills and all the plans have been prepared with this in view. Each step of the manufacturing process is effectively provided for and the whole manufacturing operation will be a continuous one, carried on at a minimum of expense and without waste of time, labor, power or material.

The cut of the proposed structures, gives a general idea of the appearance which will be presented by the mills to be in full operation for the manufacture of pulp, in January, 1914. The cost of construction and equipment has been carefully estimated and is very moderate, especially in view of the fact that the mills plant, machinery and equipment will all be of the most modern design and of a substantial and permanent character.

Markets, Profits and Returns on Capital Investment.

The chief market for mechanically ground wood pulp, at present and prospectively, is undoubtedly the United States. For many years almost the entire amount of the imports of this class of wood pulp into that country has been furnished by Canada. The quantity available for export from Canada has been diminished by the installation of additional paper machines in Canadian mills. The normal demand will increase and the tendency of prices must be upwards. Pulp



J. A. McAndrew Secretary and Counsel

manufactured by Abitibi Pulp & Paper Company, Limited, from settlers' wood will, under present tariff regulations, be admitted free of duty. The imposition of the present duty of one-twelfth of one cent per pound, dry weight, upon pulp manufactured by the company from other than settlers' wood, will be an inappreciable handicap, owing to the company's cost of production being so low. Manufacture and shipment can be carried on in all seasons. The favorable freight rates which have been secured, make markets easily accessible.

Additional profits will undoubtedly be realized from the operation of a paper mill of modern construction and equipment. A sufficient amount of the authorized capital stock and bond issue is being reserved for such construction and equipment, which, from present outlook, will almost immediately be proceeded with. Other sources of profit which have not been taken into present

consideration, will be found in the operation of land and lumber-manufacturing businesses and from the sale of surplus electric power. The company will lay out and control the site of a model town, plans for which are being prepared by an architect and landscape artist. A mercantile business, in the profits of which the employees of the company will share, will be established. The total profits of the company will, without doubt, be in excess of the moderate estimate above given.

Half of the amount realized from the sale of the bonds will be in the form of cash working capital, and the total issue of $1,000,000 is a first charge upon the assets and undertaking of the company, having a value, outside of rights and franchises, it is estimated, double the amount of the bond issue.

Trustee for Bondholders—The Royal Trust Company

The term of the power lease is twenty years and with the right of renewal for two further and successive terms of ten years, upon terms and conditions and at such rental as may be agreed upon or fixed or determined by the Minister at the time of such renewal.

The rental to be paid the Government under this lease is ten dollars for the first and second years and thereafter at the rate of fifty cents per annum for each horse power used up to 4,000 horse power, and thirty-five cents for each horse power is excess of 4,000 horse power, with the proviso that the rental after the second year shall be not less than $2,000.00 per annum.



West Channel of Abitibi River at Iroquois Falls

Mr. F. H. Anson, formerly of the Ogilvie Milling Co., is president, which assures the company of safe and successful management. Mr. Shirley Ogilvie is also associated with the new company as vice-president and treasurer, and J. A. McAndrew, of Toronto, is secretary and counsel.

Mr. Geo. E. Challes, of the Riordon Pulp & Paper Co., Ltd., is also a director. Beside these, the following appear on the directorate: D. Lorne McGibbon, Sir Thomas Tait, Hon. Geo. Gordon, James Playfair, and Victor E. Mitchell, K.C., of Montreal.

The capital stock has been issued as follows:

	Authorized.	Issued.
Seven per cent. cumulative convertible preferred stock	$1,500,000	$1,000,000
Common stock	3,500,000	3,000,000

Transfer Agent—Montreal Trust Company.

Registrar—Eastern Trust Company.

Bond Issue.

	Authorized.	Issued.
First mortgage six per cent. sinking fund gold bonds	$1,500,000	$1,000,000

PROPOSED MILL ARRANGEMENT

Partial Report of Geo. F. Hardy

We propose to install eighteen large grinders of latest and modern make, and these are to be equipped with grinder stones 36 inches wide and be capable of taking pulp wood 32 inches long.

The pulp wood logs from the limits will be floated to and boomed at the foot of the log haul-up in the mill pond. This log haul-up will convey the logs in parallel lines to the slasher cutting-up rig equipped with sufficient saws to cut the logs, of length determined upon, into pieces of equal length, each 32 inches.

A good arrangement will be five saws cutting logs 16 feet long into six pieces of equal length, producing no waste in the shape of short butt ends. Shorter logs can, of course, be cut up on this slasher, but preferably they should be of a length that is a multiple of 32 inches, and the logging should as far as practicable be confined to logs 16 feet and 8 feet long.

After passing the saws such of the wood as is required for the day's operation in the Grinder Room is conveyed to the barkers and thence to the storage bin between the grinders and wheel flumes from which it is floated to the grinders by means of a water trough, one for each two adjoining lines.

We are planning to run the cutting-up saws and barkers during the day time only and ample storage space will be provided for in the block bin in the Grinder Room for the night tour.

The slasher saw rig will have ample capacity to cut in ten hours during the open season all the wood required for immediate use, as well as that which must be stored for the winter season. The surplus wood for winter use will be conveyed to the piling ground on the highest level and thence distributed to the storage pile by a travelling pulp wood elevator of modern design.

Unbarked wood is to be stored and barked in winter, so that the barker room waste will be available for fuel under the boilers which furnish the steam for heating the plant during the winter. These unbarked blocks will be returned from storage to the barker room by the same conveyor which elevated them to the upper level.

as much as practicable of the pulp and thereby reduce the waste to the minimum.

A machine or repair shop with suitable tools will be provided at one end of the screen and press room, which will take care of all ordinary repairs required in a mill of this kind, and in this shop will be located the wood working tools for making the wooden cleats used on the pulp bales. In the same end of the room, but on the opposite side, will be located the store room for general supplies such as felts, wires, plates and belts. Both this store room and repair shop are situated conveniently to the railroad siding.

An inclined passageway will connect the screen and press room with the power house and the wood preparingroom. In this passageway there will be a stairway for easy communication between the different levels, and also an inclined power-driven elevator for lowering grinder stones from the upper level reached by the railroad siding to the grinder room floor.

At the west end of this grinder room we are planning for a separate room in which the grinder stones can be stored and fitted on the grinder shafts, and in this room will also be located the stock and water pumps



Middle Chute, Couchiching Falls, Abitibi River

Wood from settlers, which cannot readily be floated and boomed, and which will arrive by railway, will be cut up on a separate slasher located alongside the pulp wood siding and be thence conveyed to storage or barker room exactly the same as the river wood. This settlers' wood arriving by railway should preferably be cut into 8-foot lengths or at least into lengths which are a multiple of 32 inches.

From the grinder room the liquid pulp, after being first rough-screened for the removal of long slivers, will be pumped to the fine screen in the screen and press room which is located on the higher ground beyond the top of the bank.

A double arrangement of all pulp machinery is adopted and each side is a complete unit in itself with the shipping track between them and within the building, so that cars can be loaded at all times under cover, which is a great convenience and labor-saver, especially in winter and at night time.

It is our plan to install refiners for reducing such of the rejection from the pulp screens as can be refined into good stock, and also to install save-alls for the surplus white water containing pulp which will reclaim and screens, as well as the heating unit for the buildings on the lower level.

The water, as observed in the Abitibi River is of brownish color and inclined to be muddy. We believe the color will not be deleterious to the pulp, and the mud, we feel, will be largely eliminated when the mill pond and lake levels are raised, thus giving better opportunity for this sediment to settle.

Removal of some of the color by electric filtration can be accomplished if found necessary.

General Opinion.—We are favorably impressed with the entire property, and believe that, if conservatively financed, it should, under competent management and superintendence, be a very satisfactory investment.

We wish to emphasize an especially important advantage which this development will possess, namely, freedom from trouble with frazil ice, on account of the fact that the pond created by the dam will be comparatively quite deep and extend back about eleven miles on the Abitibi River to Twin Falls and about twenty miles on Black River to McDougall's Chute.

As regards labor conditions, the present rates for common labor in Canada, such as is used in the con-

struction work, are high. This is due primarily to the large amount of construction work being carried on in the cities and by the railroads, which attracts that kind of labor, and as the supply of labor in Canada is not equal to the demand, the rates have for a year or more steadily increased.

Most of the machinery required for this development can be obtained in Canada. As far as this is practicable we recommend such a course for necessary repair parts, thereby eliminating the necessity for carrying a large stock of repair parts at the mill.

Prices for Canadian-made machinery of equal merit rule about the same as the price for machinery made in the United States plus the Canadian customs duty.

There will be ample power at Iroquois Falls for a paper mill which will consume all the pulp and which, in that event, would have a capacity of from 185 to 200 tons of news paper per day.

The production of paper is increasing this year at a faster rate than the market will readily absorb it without a softening of the selling price, while on the other hand, the prevailing tendency is toward stiffer prices on mechanical pulp, and we say this with full realization of the present stagnation in the pulp market.

Very unusual high-water conditions have prevailed during this year in all pulp and paper making districts, while at the same time much pulp which formerly was sold for use in other mills will shortly be converted into paper on new machines.

As said before, comparatively little skilled labor is required in making mechanical pulp, while in making paper the question of skilled labor is a great factor, and you will be very much better off to develop this industry at Iroquois Falls gradually.

The supply of mechanical pulp is the real barometer in the selling-price of news paper, and it is not only our opinion, but that of many well-informed men in the paper business, that the supply of mechanical pulp will not keep pace with the future demand and that much higher prices for pulp are sure to come within a very few years.



Upper Couchiching Falls, Abitibi River

OTTAWA NOTES.

Ottawa, April 14.—Notice has been issued of the postponement of the hearing of the application of Canadian shippers for reciprocal demurrage from April 15th to some date not yet fixed. The increased demurrage charges sanctioned last year by the commission as an experiment, ceased to take effect at the beginning of the present month, demurrage charge now being a flat one of $1 for every day beyond the free time allowed, instead of $2 and $3 as by the increased rates. The question now is whether the increased rates will be made permanent or whether a system of reciprocal demurrage which will fine the railway as well as the shipper for delay in unloading cars, will be established.

The railway commission will, it is expected, shortly take up the increased minimum carload weights on shipments proposed by the Canadian railways which, if approved, would embody a number of changes, the weights being raised about 20 per cent.

Canadian Trade Commissioner W. J. Egan, formerly of Manchester, Eng., and an official who, while in that capacity, did much to encourage trade in pulp and paper as well as other products between Canada and the Old Country, is now in Canada on leave of absence prior to his departure for South Africa where he will in future have charge of the office at Durban. While in Canada he will try to get in touch with firms interested in the South African trade.

That the highest level of prices ever reached in Canada was that of last year was the fact indicated by a report recently tabled in the House of Commons by the Labor Department on wholesale prices. This is not so true, however, of pulp and paper figures, which were as a rule lower than in 1911 because of improved water conditions. Of other prices, however, the report states that, "high as was the general level reached in 1911 by wholesale prices in Canada, and that was the highest probably within the present generation—a still further and pronounced advance took place during 1912."

A bulletin just issued by the Conservation Commission speaks of the efficiency of oil burning locomotives on Canadian railways in these words: "The efficiency of oil burning locomotives in connecton with the prevention of forest fires is well illustrated on the Great Northern Railway in British Columbia. Oil has been used for fuel on the locomotives operated by this company during the past two years. Since the installation of oil burners no fires have been reported as starting from locomotives, whereas previously they were fairly frequent during the dry season and caused much damage. The use of oil has also been very effective in this respect on the main line of the Canadian Pacific between Kamloops and Field, B.C., where oil burners have been installed during the past season."—Mac.

THE PROPOSED U. S. PAPER SCHEDULE IN FULL

(Special to the Pulp and Paper Magazine.)

Washington, D.C., April 10, 1913.

A new tariff bill, drawn jointly by President Wilson and the Ways and Means Committee was introduced at the opening session of the Sixty-third Congress. This bill is the long-promised report of the committee in respect to tariff revision. The bill is entitled: "An Act to simplify laws in relation to the collection of revenues," approved June 10th, 1899, as amended in 1909. The revision in the tariff in every case is downward, and it is estimated that it will create a deficit of more than $80,000,000 in the revenues of the United States Government if it is passed. This deficit will be made up by a direct tax on individual incomes, beginning with the excess of $4,000 a year and imposing a graduated assessment of from 1 to 4 per cent. on incomes ranging from $20,000 to $100,000 and over above the minimum.

The paper industry in general, and the news print end of it in particular, will be very hard hit if the measure goes through. The last vestage of protection would be vanished, except in the case of sulphite pulp from Canada, which, as provided by the bill, will pay a tax of one-tenth cents per pound, if made from restricted wood.

Printing papers for books and other purposes, of over 2½c. per pound in value, have also been cut from the basis of an average ad valorem duty of 18.80 per cent. to 12 per cent. Duty on other lines of paper have also been greatly reduced. The new rate of 12 per cent. applies to all print papers over 2½c. per pound.

Writing papers which to-day enjoy a protection of 3c. a pound, and 15 per cent. ad valorem, are scheduled to a rate of 25 per cent. ad valorem. The reduction in this instance will aggregate an average of approximately 8 per cent.

The bill as applied to the paper industry is given herewith:

SCHEDULE M—PULP, PAPERS, AND BOOKS.

Dutiable.

332. Sheating paper and roofing felt, 5 per centum ad valorem.

333. Filter masse or filter stock, composed wholly or in part of wood pulp, wood flour, cotton or other vegetable fibre, 20 per centum ad valorem.

334. Printing paper (other than paper commercially known as hand-made or machine hand-made paper, japan paper, and imitation japan paper by whatsoever name known), unsized, sizes, or glued, suitable for the printing of boks and newspapers, but not for covers or bindings, not specially provided for in this section, valued at 2½ cents per pound, 12 per centum ad valorem; provided, however, that if any country, dependency, providence, or other sub-division of government shall impose any export duty, export license fee, or other charge of any kind whatsoever (whether in the form of additional charge or license fee or otherwisee) upon printing paper, wood pulp, or wood for use in the manufacture of wood pulp, there shall be imposed upon printing paper, when imported either directly or indirectly from such country, dependency, province, or other sub-divison of government an additional duty equal to the amount of such export duty or other export charge imposed by such country, dependency province, or other sub-division of government, upon printing paper, wood pulp, or wood for use in the manufacture of wood pulp.

335. Papers commonly known as copying paper, stereotype paper, bibulous paper, tissue paper, pottery paper, letter-copying books, wholly or partly manufactured, crepe paper and filtering paper, and articles manufactured from any of the foregoing papers or of which such is the component material of chief value, 30 per centum advalorem.

336. Papers, including wrapping paper with coated surface or surfaces, not specially provided for in this section, including wrapping paper, with the surface decorated or covered with a design, fancy effect, pattern or character whether produced in the pulp or otherwise, but not by lithographic process, whether or not wholly or partly covered with metal or its solutions (except as heretinafter provided) or with gelatin or flock, or embossed or printed, cloth-lined or re-inforced paper, parchment papers, and grease-proof and imitation parchment papers which have been super-calendered and renered transparent, or partially so, by whatsoever name known; all other grease-proof and immitation parchment papers, not specially provided for in this section, by whatever name known; bags, envelopes, printed matter other than lithographic, and all other articles composed wholly or in chief value of any of the foregoing papers, not specially provided for in this section, and all boxes of paper or wood covered with any of the foregoing paper, 35 per centum ad valorem; albuminized or sensitized paper or paper otherwise surface-coated for photographic purposes, plain basic papers for albuminizing, sensitizing, baryta coating, or for photographic or solar printing processes, 25 per centum ad valorem.

337. Pictures, calendars, cards, labels, flaps, cigar bands, placards, and other articles composed wholly or in chief value of paper lithographicaly printed in whole or in part from stone, metal, or material other than gelatin (except boxes, views of American scenery or objects, and music, and illustrations when forming part of a periodical or newspaper, or of bound or unbound books, accompanying the same, not specially provided for in this section) shall pay duty at the following rates: Labels, flaps and cigar bands, if printed entirely in bronze printing, 15 per centum ad valorem; if printed otherwise than entirely in bronze printing, but not printed in whole or in part in metal leaf, 25 per centum ad valorem; if printed in while or in part in metal leaf, 30 per centum ad valorem; booklets, boks of paper or other material for children's use, not exceeding in weight twenty-four ounces each, fashion magazines or periodicals, printed in whole or in part by lithographic process, or decorated by hand, booklets, decorated in whole or in part by hand or by spraying, whether or not lithographed, 12 per centum ad valorem; decalcomanias in ceramic colors, whether or not backed with metal leaf, and all other decalcomanias, except toy decalcomanias, $30 per centum ad valorem; pictures, calendars, cards, placards, and all other articles than those hereinafter specially provided for in this paragraph, 20 per centum ad valorem.

338. Writing, letter, note, hand-made paper and paper commercially known as hand-made paper and machine hand-made paper, japan paper and imitation japan paper by whatsoever name known, and ledger, bond, record, tablet, typewriter, manifold, and onionskin and imitation onionskin papers calendered or uncalendered, whether or not any such paper is ruled, bordered, embossed, printed, lined, or decorated in any manner, 25 per centum ad valorem.

339. Paper envelopes not specially provided for in this section, folded or flat, bordered, embossed, printed, tinted, decorated, or lined, 15 per centum ad valorem.

340. Jacquard designs on ruled paper, or cut on Jacquard cards, and parts of such designs, cardboard and Bristol board, press boards or press paper, paper hanging with paper back or composed wholly or in chief value of paper, and wrapping paper not secially provided for in this section, 25 per centum ad valorem.

341. Books of all kinds, bound or unbound, including blank books, slate books and pamphlets, engravings, photographs, etchings, maps, charts, music in books or sheets, and printed matter, all of the foregoing, and not specially provided for in this section, 15 per centum ad valorem. Views of any landscape, scene, building, place or locality in the United States, on bardboard or paper, not thinner than eight one-thousands of one inch, by whatever process printed or produced, including those wholly or in part produced by either lithographic or photogelatin process (except show cards), occupying thirty-five square inches or less of surface per view, bound or unbound, or in any other form, 45 per centum ad valorem; thinner tha neight one-thousands of one inch, $2 per thousand.

342. Photograph, autograph, scrap, post card, and postage stamp albums, wholly or partly manufactured, 25 per centum ad valorem.

343. All boxes made wholly or in chief value of paper or papier mache, if covered with surface-coated paper, 35 per centum ad valorem.

345. All papers and manufactures of paper, or of which paper is the component material of chief value, not specially provided for in this section, 25 per centum ad valorem.

385. Masks, composed of paper or pulp, 20 per centum ad valorem.

FREE LIST.

That on and after the day following the passage of this Act, except as otherwise specially provided for in this Act, the articles mentioned (in part) in the following paragraphs shall, when imported into the United States or into any of its possessions (except the Philippine Islands and the Islands of Cuam and Tutuila), be exempt from duty.

Pulp, Paper and Books.

437. Books, engravings, photographs, etchings, bound or unbound, maps and charts, imported by authority or for the use of the United States, or for the use of the Library of Congress.

438. Books, maps, music, engravings, photographs, etchings, bound or unbound, and charts, which shall have been printed more than twenty years at the date of importation, and all hydrographic charts, and publications issued for their subscribers or exchanges by scientific and literary associations or academies, or publications of individuals for gratutious private circulation, and public documents issued by foreign governments.

440. Books, maps, music, photographs, etching, lithographic prints, and charts, specially imported, not more than two copies in any one invoice, in good faith, for the use and by order of any society or institution incorporated or established solely for religious, philosophical, educational, scientific, or literary purposes, or for the encouragement of the fine arts, or for the use and by order of any college, academy, or school, or seminary of learning in the United States, or any State or public library, and not for sale, subject such regulations as the Secretary of the Treasury shall prescribe.

439. Books and pamphlets printed chiefly in languages other than English; also boks and music, in raised print, used exclusively for the blind.

441. Books, liabraries, usual and reasonable furniture, and similar household effects of persons or families from foreign countries, all the foregoing, if actually used abroad by them not less than one year, and not intended for any other person or persons, nor for sale.

549. Manuscripts.

564. Newspapers and periodicals; but the term "periodicals" as herein used shall be understood to embrace only unbound or paper-covered publications issued within six months of the time of entry, devoted to current literature of the day, or containing current literature as a predominant feature, and issued regularly at stated periods, as weekly, monthly, or quarterly, and bearing the date of issue.

575. Printing paper (other than paper commercially known as hand-made or machine hand-made paper, japan paper, and imitation japan paper by whatever name known), unsized, sized, or glued, suitable for printing of books and newspapers, but not for covers or bindings, valued at not above 2½ cents per pound.

576. Parchment and vellum.

651. Wood: logs, timber, round, unmanufactured, hewn or sawed, sided or squared; pulp wods, kindling wood, fire wood, hop poles, fence posts, handle bolts, shingle bolts, gun blocks for gunstocks, rough, or sawed, or planed on one side; hubs for wheels, posts, heading bolts, stave bolts, last blocks, wagon blocks, oak blocks, heading blocks, and all like blocks or sticks, rough hewn, sawed or bored; sawed boards, planks, deals and other lumber, not further manufactured than sawed, planed and tongued and grooved; clapboards, laths, pickets, pailings, broom handles and wood flour; all the foregoing not specially provided for in this section.

653. Mechanically ground wood pulp, chemical wood pulp, unbleached or bleached; provided, that if any country, dependency, province, or other sub-division of government, shall impose an export duty or other export charge of any kind whatsoever, either directly or indirectly (whether in the form of additional charge, or license fee, or otherwise) upon printing paper, mechanical ground wood pulp, chemical wood pulp, or wood for use in the manufacture of wood pulp, the amount of such export duty or other export charge shall be imposed as a duty upon chemical wood pulp when imported directly or indirectly from such country, dependency, province, or other sub-division of government; and if any country, dependency, province, or other sub-division of government shall prohibit the exportation of printing paper, mechanically ground wood pulp, chemical wood pulp, or wood for use in the fanufacture of wood pulp, there shall be imposed a duty of 1/10 of 1 per cent. per pound upon such chemical wod pulp when imported directly or indirectly from such country, dependency, province, or other subdivision of government.

Paper Stock (Free).

421. Bagging for cotton, gunny cloth, and similar fabrics, cuitable for covering cotton, composed of single yarns made of jute, pute butts, seg, Russian seg, New Zealand tow, Norwegian tow, aloe, mill waste, cotton tares, or other material not bleached, dyed, colored, stained, painted, or printed, not exceeding sixteen threads to the square inch, counting the warp and filling, and weighing not less than fifteen ounces per square yard.

497. Flax straw.

507. Grasses and fibres: Istle or Tampico fibre, jute, jute butts, manila, sisal grass, sunn, and all other textile grasses or fibrous vegetable substances, not dressed or manufactured in any manner, and not specially provided for in this section.

574. Paper stock, crude, of every description, including all grasses, fibres, rags, waste, including jute waste, shavings, clippings, old paper, rope ends, waste rope, and waste bagging, and all other waste not specially provided for in this section, including old gunny cloth and old gunny cloth and old gunny bags, used chiefly for paper making.

593. Rags, not otherwise specially provided for in this section.

M. E. B.

OCEAN FALLS CO. SHAREHOLDERS MEET.

(By wire to the Pulp and Paper Magazine.)

Victoria, B.C., April 10, 1913.

The shareholders of the Ocean Falls Co., Limited, whose pulp mills are at Ocean Falls, B.C., and head office in Vancouver, held a meeting to-day to discuss winding-up the company or reorganizing. The total debts of the company are $300,000.—R. L. C.

WHAT MR. DODGE SAID BEFORE

(Special to the Pulp and Paper Magazine.)

New York, N.Y., April 8, 1913.

In discussing the possibility of paper being placed on the free list and its effects upon the industry, just prior to the new tariff bill being introduced at the opening of the Sixty-third Congress at Washington yesterday, Phillip T. Dodge, President of the Internaional Paper Company, of this city, in an interview, said: "There is a peculiar situation in this free paper proposition. Every thoughtful person knows that available timber is fast disappearing in the United States and paper manufacturers, especially the makers of the cheaper grades, even now have to look for raw material outside of this country.

"Canada is blessed with fertile and almost endless forest tracts. So our company and other American paper makers, sometime ago purchased the stumpage right to certain forest lands there, from which we receive part of the raw material we are now using.

"Several years ago the Canadian Government enacted a law prohibiting the exportation of timber from any Crown lands, and although we are still paying the yearly rentals on these lands, we are unable to get any timber from them. When this law was passed a provision was inserted whereby timber then cut and on the way was to be allowed to go out of the country. This supply is now practically exhausted, and when I say we should receive about 50 per cent. of our raw material from Canadian woods, it can be understood what a vital situation we are facing.

"Therefore, it can be readily seen that if paper is placed on the free list by Congress, it will mean that Canada and other countries will be allowed to send finished paper products into this country free of duty, while American manufacturers will be prevented from getting any raw material from Canada. This means that the American manufacturer will have to compete against a double restriction, for paper will be duty free, but the raw material supply will be curtailed, Canada desires to build up her industries and the Government there does everything possible to protect established and proposed enterprises. At the present time New Brunswick is enacting a legislation making all leases of land stumpage conditional upon the establishment of paper mills in that country.

"Paper makers do not want an excessive high duty on paper imported into this country, but a certain duty should be maintained so as to give American manufacturers an equal chance to compete with other countries."—M. E. B.

NEW YORK VIEW

(Special to the Pulp and Paper Magazine.)

New York, April 9, 1913.

A well-known local authority in discussing to-day the new tariff bill with your correspondent, and its affects upon the American paper industry, stated:

"The paper industry has been hard hit by the tariff bill presented to the House on Monday. There has been a general reduction in practically every grade, and in some instances these have been quite radical.

"Printing paper suitable for books and newspapers, was graded and taxed under the Tariff Act of 1909 as follows: Value not over 2¼c. per pound, 3/16c. per pound; value over 2¼c. and not over 2½c. per pound, 3/10c. per pound; value over 2½c. and not over 4c. per pound, 5/10c. per pound; value over 4c. and not over 5c. per pound, 8/10c. per pound; value over 5c. per pound, 15 per cent. ad valorem. All these grades above 2½c. per pound are scheduled in the new bill at an ad valorem tax of 12 per cent. The former average was 18.80 per cent.

"Paper costing 2½c. per pound and under has been placed on the free list. By the passage of the reciprocity agreement with Canada, or rather that section of it known as 'Section 2,' this 2½c.(and under) paper was admitted free from that country, provided it had been made from wood upon which there was no export restrictions, or, in other words, from wood grown on free lands, as opposed to wood grown on Crown lands, the export of which latter wood is prohibited by the Canadian Provinces. Under the former rule only a comparatively small percentage of Canadian news print paper was entitled to free entry, but by the terms of this latest bill, all news print paper, irrespective of origin, or of export restrictions, will come in free from any part of the world.

"Chemical bleached pulp now pays ¼c. per pound duty, and unbleached ⅛c. per pound. The Ways and Means Committee now propose to admit these free except when there are export restrictions on the pulp or the raw wood from which it is made in the country of origin, in which case there will be imposed a duty of 1/10 of 1 per cent. per pound. Ground wood pulp, by the terms of the new bill remains on the free list, but is no longer subjected to a countervailnig duty on account of export restrictions.

"Writing paper of various grades, which are now taxed at 3c. per pound and 15 per cent. ad valorem, are scheduled to be admitted into this country at a duty of 25 per cent. ad valorem, a reduction, in round numbers, of about 8 per cent."

"If the bill now before Congress becomes law," concluded he, "the news print industry will suffer severely. It is questionable if sevral of the smaller concerns can stand the strain and it is thought that there will be a general closing of mills through failures and the efforts of foreign competition. Once these mills are closed it will be comparatively easy for the Canadian and foreign exporters of paper to regulate market prices to suit themselves."—M. E. B.

NEW AGENCY.

Mr. T. D. Wardlaw, 23 Scott Street, Toronto, announces that he has completed satisfactory arrangements with a leading Dundee firm and will carry in Toronto a full stock of burlaps in all weights and widths used by the trade, and also of jute twine. Mr. Wardlaw has access to first market information and is able to quote closest terms.

Ottawa, Ont., April 14.—Mr. W. H. Rowley, president and joint manager of the E. B. Eddy Company, Limited, who was recently laid up by an attack of grippe, is absent for his health in Lakewood, N.J. He will return, however, this week, and his indisposition has been declared not of a serious nature.—Mac.

Petition for winding-up order has been granted the Richelieu Lumber Company, Limited.

NEW LEGISLATION RESPECTING CROWN TIMBER LANDS IN NEW BRUNSWICK

By R. B. MILLER, Special Corresponbent of Pulp and Paper Magazine

Among the bills passed by the New Brunswick Legislature, recently prorogued at Fredericton, there was none which excited greater comment or was fraught with greater significance than Bill No. 86, "An Act relating to the Crown Timber Lands of the Province."

These lands, comprising over 10,000 square miles in extent, furnish a very large part of the revenue of the province, without which appropriations for public works and education would be reduced and general progress greatly impeded. Some idea of their immense value to the province can be gained from the following tabulated statement of the amount of lumber cut on them upon which stumpage has been paid for the past six years, furnished by Provincial Secretary McLeod:

Year.	Stumpage (Superficial feet).	Stumpage Collections.
1906	141,000,000	.....
1907	149,000,000	.....
1908	151,000,000	.....
1909	204,500,000	.....
1910	280,000,000	.....
1911	310,000,000	$367,679.14

Before the presentation of the Bill in the Legislature, two delegations were received and presented their views before the House. The first was from the larger operators in the province and they endeavored to show that the present leases should be made perpetual. They claimed that such action was in the interest of conservation of the forests, as well as their improvement for lumbering purposes, in the construction of permanent roads and stream improvements. Further, that the erection of up-to-date mills, with expensive equipment, required a perpetual leasing system so that a constant timber supply might be assured. Without such an assurance, the banks and issuers of timber bonds would be very slow in advancing capital to mill owners, upon which extension of credit their financial success depended. They further attempted to show that the New Brunswick log scale was unjust and that it contained larger values for logs of similar size and diameter than either the Quebec or British Columbia rules, so that it would be unwise for the Government to raise prices for stumpage. Among other prominent lumbermen appearing before the Legislature was Senator Edwards, of Ottawa, who also operates in New Brunswick.

The side of the smaller operators was presented by a delegation from the New Brunswick Lumbermen's Protective Association, whose president is Thos. W. Flett, of Newcastle. Their memorial, which was given careful consideration by the Legislature, showed that there were quite a number of operators having a large amount of capital invested in mills and plant with little or no limits to supply such mills. That on the Miramichi alone there were eighteen of these operators whose mills and plant are valued at $338,000.00 and whose limits extend to 213 miles only; while on the other hand there are eight other operators whose mills and plant are valued at $386,000.00 and who have 2,306 miles of lumber lands. That, with the exception of the 213 miles held by the eighteen smaller operators, the 2,306 miles held by the other operators comprise practically the whole of the lumber lands in the district of the Miramichi, and to renew the existing leases in perpetuity, in accordance with the request of the lager operators, would result in the shutting out for all time of the smaller operators from ever acquiring any additional territory.

They further showed that the interests of the smaller operators demanded a more equitable distribution of the lumber lands and that it was not in the best interests of the province to make the leases perpetual.

They, therefore, desired to ask favorable consideration of the following points, by the Executive Committee:

"That no future license should cover a greater area than 100 square miles, and that no person or firm, or combination of persons or firms, should be allowed to hold limits exceeding that total area;

"That at the expiration of the present leases, all the limits included in them should revert to the Government and that a survey of whole of the lumber lands in the province should be made prior to such expiration, which shall show not only their exact locality, but the precise nature and estimated value of the lumber standing thereon;

"That fifty per cent. of such limits should be reserved for the holders of the present licenses; twenty-five per cent. for mill owners and other licensees whose holdings at present do not exceed 50 miles; and the remaining twenty-five per cent. be put up for sale in the open market, to the free competition of persons who at present hold no limits;

"That only by these means could the smaller operators who have invested their capital to the extent of $338,000 in mills on the Miramichi be saved losing the benefit of the same."

In the course of their arguments, the members of the delegation showed that the smaller operator met with even greater difficulty than the larger in the financing of his business; and that, instead of cutting and slashing the forest, the smaller operator was more likely to conserve them and to practise intensive methods than the larger operator who had large limits and let them out to jobbers or contractors. Moreover, that if the province intended to keep the young men at home, it must give them the opportunity to go out upon these lands and work out their success as their fathers had done, instead of placing the lands in the hands of monopolists who held lands for speculative purposes, were not cutting the amount they should off of their holdings, and could then go out and compete with the small operators in buying bank logs which they needed to run their own small mills.

Premier Flemming, in replying on behalf of the Government, said that he was sure he was voicing the feelings of his colleagues in the Government, as well as every member of the House, when he expressed the pleasur it had given them to listen to the presentation of the case of the small operators. They need make no excuses for their delegation. There had been many delegations here this session on various matters before the Government and the Legislature, but he could fairly say that no case had been better presented or so moderately set forth as that of the smaller operators. As in the case of the big operators he could say that the Government did not expect to be able to work out a plan that would suit everybody in the handling of the

Crown timber lands of the province. There were too many diverse interests to expect to be able to please them all. The Government and the Legislature would deal with the matter in a fair and reasonable way, and in an effort to give justice to all. They might not be able to meet the views of the small operators nor please the big lumbermen. They would approach the subject with the knowledge of how big the lumber industry in New Brunswick really is, and with the view of keeping the industry up to its present standard, and in reaching their decision would endeavor to serve the best interests of the lumber industry.

The following is a brief resume of the bill:

The two classes of licenses will be issued on and after August 1st next, viz.: (a) The Pulp and Paper License, (b) The Sawmill License.

The Pulp and Paper License renewable from year to year for a period of thirty years and may be extended for a further period of twenty years and subject to payment of bonus for a thirty-year privilege and at the expiration of that time of another bonus for the next twenty years.

The Saw Mill License renewable from year to year for twenty years, and may be extended for a further period of ten years, with bonuses payable for the privilege of each period the same as with the Pulp and Paper License.

Present license holders must notify the Surveyor-General by July 15th next that they will come in under the new licenses on August 1st, 1913, or continue under the existing licenses.

The bonuses to be paid per square mile under the new leases shall be payable as follows: Pulp and Paper Licenses, one-third each on August 1st, 1913, August 1st, 1923, and August 1st, 1933; Sawmill Licenses one-half each on August 1st, 1913, August 1st, 1923.

The power to determine the stumpage rates and make regulations governing the Crown Lands is affirmed in the Lieutenant-Governor-in-Council.

Provision for encouragement of conservation of the forests by allowing operators, who will set aside certain lands for a period of twelve years, before the expiration of their leases and not cut over them, but allow them to reproduce, to have the privilege of cutting on these lands for ten years after the expiration of the lease, without the payment of bonus, and paying only a stumpage and mileage fee.

A survey, examination and classification of the Crown Lands of the province to be completed by August 1st, 1917, one year before the present leases expire.

Provision is made that in the event of the survey, examination and classification of the Crown Lands showing that present license holders have their leases on territory producing more lumber than is necessary for their needs, a portion of these lands, not exceeding twenty-five per cent., can be taken out of existing leases and leased to mill owners upon application to the Lieutenant-Governor-in-Council.

The clause dealing with licenses divides them into two classes, as follows:

(a) A license to be known as "The Pulp and Paper License" which shall contain as part of its conditions the following provisions and requirements: At least fifty per cent. of the lumber cut yearly upon said Crown lands under such license shall be manufactured into pulp and paper within the Province of New Brunswick. That the licensee agrees upon taking up the license that he shall acquire or erect and operate a pulp mill within three years of the date of taking out of such license, and that he shall acquire or erect and operate a paper mill within five years from the same date and that both the pulp and paper mill shall be of sufficient capacity to manufacture the quantity of timber above mentioned, and further that the operation of such pulp and paper mill shall be continuous from year to year for a period of thirty years and shall be subject to an extension for a period of twenty years from the termination of the thirty-year period upon the condition hereinafter provided. The renewal from year to year for the thirty-year period and the yearly renewals during the extended period of twenty years to be subject to a satisfactory compliance on the part of the licensee with such rules and regulations as may be made from time to time by the Lieutenant-Governor-in-Council in dealing with the Crown lands of the province.

(b) A license to be known as "The Sawmill License." A condition of this license to be that it shall be renewed from year to year for a period of twenty years from the first of August, 1913, and at the expiration of that period may be extended for a further period of ten years, such renewals both as regards the twenty-year period and the extended period of ten years being conditional on the satisfactory carrying out of the rules and regulations made in connection with the Crown lands areas.

The Lieutenant-Governor-in-Council will determine prior to the first of July, 1913, the amount of the bonus to be paid under the different classes of licenses. At the end of the period of the license the Lieutenant-Governor-in-Council will determine the amount of the bonus to be paid for the privilege of cutting during the extended period permitted by the Act. The bonus in all cases is considered as being in lieu of the lands being offered at public sale.

A provision is also included in the bill providing for protection of the interests of the small operator. It is proposed to reduce the holdings of any large companies which are unable to cut the annual growth on their limits and enable the small operators with idle mills to operate upon them. In order to discover where such changes should be made, the Government proposes to have the Crown timber lands thoroughly cruised and surveyed.

RAISING PAPER.

Civilization is wrapped up in paper. How would the world get along without it for a single day? The rate at which the forests are being ground up for paper will in the near future bring us to the end of the supply. What will we do then? That is a problem not yet worked out. But it is more than likely that our friend, the farmer, will come to the rescue. The Department of Agriculture of the United States has been conducting a long series of experiments in paper making. Cornstalks, cotton hulls, broom cornstalks, flax, rice and other straws, which are now practically waste materials, have all yielded to the paper making experiments. From flax straw can be made a paper strong enough for cement bags. From the cellulose of the cornstalks can be made wrapping paper and paper boxes. The best high-grade paper is made from the shell of the cornstalks.

None of these materials can yet be made into paper so cheaply as the wood pulp, but further experiments may remedy this matter. From the cornstalks is obtained a sort of syrup or molasses. It is probable that this contains most of the feed value of the stalk. If that proves to be the case, then this by-product should materially reduce the cost of the paper making, while adding to the supply of stock feed. It is probable that in the future the farmer will raise our raw material for paper making, and that corn will be raised in greater quantity than now. This may make it necessary for the farmer to raise more live stock, and thus increase the supply of meat, milk and butter. Not a bad thing for the people, either.—Financial Times.

Joseph Parritt, general superintendent of Jonquiere Pulp Co., Jonquiere, Que., has tendered his resignation to take effect immediately.

BRITISH TRADE NEWS

(Special to the Pulp and Paper Magazine.)

London, April 12, 1913.

In the Pulp and Paper Magazine for March 1, two questions are put by a reader, viz.: (1) How much kraft is imported from Great Britain? (2) How much book paper is imported from Great Britain? So far as the United Kingdom is concerned, it is a physical and mental impossibility to give a reply to the two queries and probably the same experience prevails on the Canadian side. From enquiries your correspondent has made in London Customs circles, the various classes of paper are not properly distinguished from each other, and, therefore, kraft might be anything to the authorities. It must also be borne in mind that kraft is very largely imported into the British markets from Scandinavian sources and in the course of time re-exported to places abroad. Consequently to arrive at definite figures would prove futile, as a census of the mills and the exporters would be necessary, and then they would not be accurate. The Customs authorities in the United Kingdom have an antiquated way of classifying their imports and exports of paper, and like the consular service there are bitter complaints against them. Each month the Pulp and Paper Magazine has a carefully prepared return of paper and pulp submitted to it from the London Customs and Trade Board offices. They are obtained at considerable trouble and expense, and they are reliable so far as they go, but to distinguish kraft from exparto papers the Customs will not venture on the task. This is a matter the new Canadian Pulp and Paper Association might look into, with a view to reform on the Dominion side.

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The well-known firm of Edward Lloyd, Ltd., whose chairman is President of the British Wood Pulp Association, have issued their annual report for the year ending December 31, 1912. It states that the profits for the year, after allowing for depreciation and making provision for bad and doubtful debts and contingencies, amount to £140,337, making, with the balance brought forward from the previous year, £16,392, a total of £156,729. Deducting interest on pension account, directors', auditors' and registrars' fees, head office expenses, etc., £9,975, there remains £146,754. There has been carried to reserve £20,000, while the balance has been written off capital, alteration and preference share issue expenses, £6,000, and the directors now recommend a final dividend for the year on the ordinary shares at the rate of 24 cents per share, leaving to carry forward £23,629. The profits for the year are £4,040 less than in 1911, owing to the effect of the coal strike in England and labor disturbances later on in the year, which caused heavy additional expenses to the company in maintaining supplies of raw materials and in the execution of many of its important contracts. The loss under this head prevented the company from obtaining the full benefits of the heavy capital outlay on the important extensions made in 1911 and 1912. The new papermaking machines and electrical plant are now working very satisfactorily and have greatly strengthened the position of the company in reducing the cost of production and enabling it to meet competition.

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In Manchester the makers of glazed casings have held a meeting, under the auspices of the Papermakers' Association, and it was unanimously decided that a further advance of $2.40 on present prices was necessary in consequence of the increased cost of materials, coal and manufacturing expenses generally. One of the great reasons for the advance is the enormous price of coal. Since the last strike the mine owners have been having things all their own way to make up for past losses and manufacturers are being called upon to meet extra expenditure.

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The United Alkali Co., Ltd., report for 1912 states that, after paying interest on the debentures (about £2,785,000) and transferring £15,000 to the debenture redemption fund, the profit is £221,173, while £48,033 was brought forward. The directors transfer £50,000 to the depreciation portion of the reserve fund (making this £1,150,000), and, after paying the full 7 per cent. preference dividend for the year, carry forward £32,975. The report adds that the decrease in the profit has been principally due to the increased price which the company has had to pay for raw materials and to the coal strike, as the latter not only contributed to the advance in price but restricted supplies of fuel and other materials to such a degree that the works had to a large extent to be laid idle. A corresponding advance in the selling price of the company's products was found to be impossible. No dividend is to be paid on the ordinary shares. For each of the last three years there was a 2 per cent. dividend on these shares.

* * * *

One of the attractive organizations at the Sittingbourne Paper Mills, in Kent, belonging to Messrs. Edward Lloyd, is the Sick and Funeral Benefit Society. No less than 500 workers belong to it, and the objects are to help the employees when they, through no fault of their own, become sick and assist them in times of distress. It is purely a mill organization and it is now 40 years in existence, which speaks volumes for the energy of those employed in the mill. In a great many other mills in the United Kingdom similar organizations prevail amongst the employees and in their efforts they are greatly encouraged by the mill owners and directors, who are really the originators of the schemes. Besides providing sick benefits these societies arrange social evenings for the mill hands and their wives and sweethearts, and as your correspondent has had the pleasure of attending one of these social functions sometime ago, he can speak from experience and say they are the finest thing a mill manager could undertake to promote. Such societies create thrift and sobriety, give a mill hand an interest in his work because he has got something at stake and once or twice a year is afforded an opportunity of hearing what his work is like in the eyes of his superiors, and receives encouragement for it. For these reasons it is hoped Canadian mills will all adopt a similar scheme.

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The twenty-fourth ordinary meeting of the Bergvik Company was held in London, on March 19, Mr. H. C. Curtis presiding. The report for the year ending December 31, last, was presented, and the balance brought forward showed a net profit of £57,821, out of which a dividend has been declared of £33,000, leaving £24,821 to be carried forward. The reserve fund in the accounts of Bergvik och Ala Nya Aktiebolag amounts to £30,000.

Swedish company, the profit and loss account of this Taking credit for the dividend of £33,000 from the company, after providing for the London charges and interest on the debentures, shows a net profit of £48,424. Adding to this amount £178 brought forward and deducting the interim dividends of £8,751 paid on the preferred shares in August last, and £6,000 paid on the deferred shares in October last, a balance of £33,851 is left, which the directors recommend should be dealt with as follows: For the final dividend to December 31, 1912, on the preferred shares paid, February 1st, 1913, £8,751; in payment of £1 4s. per share being 12 per cent. on the deferred shares, making with the interim dividend of 3 per cent., already paid, a total of 15 per cent. for one pear £24,000; balance carried forward, £1,099.

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The remarks of the chairman at the meeting fully bear out the position your correspondent has placed Canadian pulp men in regard to Scandinavian competition and methods lately. Mr. Curtis said: "We have already sold about 60 per cent. of our production of wood. . . . The market still keeps very firm and I think we may expect it to remain so. I hear that the work in our forests is being satisfactorily accomplished this winter, on which we may congratulate ourselves. As regards pulp we have every reason to believe that the improved level of prices will be maintained and it may be that we shall see a further increase, although I do not think the strong position is fully appreciated yet by papermakers in the United Kingdom. It is, perhaps, natural that some buyers for the moment should hesitate to renew their contracts for several years ahead of increased prices, but conditions for the time being favor the seller, consumption having fully caught up production. That great consumer of pulp, the United States, cannot be fully fed for some years yet by Canada, and there is very little scope for further mills in Scandinavia, while at the same time, there is an increasing demand in all countries for pulp." In conclusion, Mr. Curtis said his company was producing commercial alcohol from the refuse chemical liquor at the pulp mill and a small profit was being made on it so far.

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The Natural History Museum, in London, has just become the recipient of 734 specimens of humming birds from Mr. R. J. Balston, papermaker, Maidstone. The birds are from South and Central America, and the collection is regarded as the best in the world.

ST. LAWRENCE PULP AND LUMBER CORPORATION BONDS WILL NET SIX PER CENT.

Chandler Bros. & Co. and Pingree & Co., of Boston, Mass., are offering to net 6 per cent. an issue of $3,000,000 first mortgage serial sinking fund 6 per cent. gold bonds of the St. Lawrence Pulp and Lumber Corporation. The bonds are part of an authorized issue of $4,000,000, dated February 1, 1913, and maturing $150,000 1916-1932, both inclusive, and $450,000 February 1, 1933.

The company owns lands, timber rights, and mills, in Gaspe and Bonaventure counties, Quebec, area of tract being over 630 square miles. Standing timber and pulp wood is appraised at $10,827,200. In this total mills, equipment, quick assets, etc., are not included. President Whitmer, of Philadelphia, estimates net earnings applicable to bond interest of $399,000 per annum.

UNITED STATES NOTES

(Special to the Pulp and Paper Magazine.)

A meeting was held in Boston, Mass., several weeks ago by representative dealers in the various parts of the country of the different lines of waste material, and an organization was formed to be known as the National Association of Waste Material Dealers. It was voted that the objects of the association should be to meet socially, thereby prompting a more friendly feeling, and to discuss subjects of interest to the trade in general. It was further voted that the membership fee should be $50 per year. The officers elected to guide the affair of the association, were: Theodore Hofeller, of Buffalo, president; Louis Birkenstein, of Chicago, first vice-president; Simon Weil, of Philadelphia, second vice-president; Charles E. Haskins, of Boston, third vice-president; Leo Loeser, of Depew, N. Y., fourth vice-president; J. H. Stedman, of Boston, fifth vice-president; William Buxton, of Boston, sixth vice-president; Chas. M. Haskins, 144 High street, Boston, secretary, and Mark Sherwin, of Boston, treasurer. There were also elected nine directors who, together with the officers, are to constitute the executive committee. Another meeting is planned for some time during May.

R. R. Donnelly & Sons, of Chicago, have been awarded the contract of printing the edition of 100,000 copies of Ben Hur, which is being issued by Sears-Roebuck Co., of that city. The West Virginia Pulp & Paper Company will furnish the paper for the edition, which is the first of an issue which is expected to amount to 1,000,000 copies.

The Philadelphia Paper Stock Dealers Association will hold its eighth annual banquet at the Continental Hotel in that city, on Thursday evening, April 24. The indications are that the affair will be a red letter event in the annals of the association, as preparations are under way for a good feast and the finest cabaret show procurable.

Louis E. Babcock, a director of the Gould Paper Co., of Lyons Falls, N.Y., died in the city hospital at Watertown on March 24, as an indirect result of an injury which he sustained several years ago. When a young man he received a bruise on the bridge of his nose, which apparently healed on the outside, but the inside later became affected, and it later developed into the serious trouble which caused his death. He was 40 years old. At the time of his death he was general manager of the Gould mill.

L. V. Mulnix, who for the past five years has been with the Peninsular Paper Company, at Ypsilanti, Mich., is now connected with the Elkhart Paper Company, of Elkhart, Ind. This company has made extensive improvements in its mill during the past year, not only by increasing its production, but by installing up-to-date machinery. Mr. Mulnix will assist in introducing the Elkhart's new lines and specialties.

The Howland Pulp & Paper Company announce that they will begin immediately the erection of a new boiler house at its plant at Howland, Me., to replace the one that was totally destroyed by fire some time ago by an explosion of two of the five large boilers. When completed, the new plant will cost in the neighborhood of $40,000. In addition to the boilers, there is to be a complete new pumping system for the plant, and also an electrical equipment for generating electricity for lighting purposes.

The plant of the Otter River Board Company, at Otter River, Mass., consisting of a four storey factory

building, was totally destroyed by fire several weeks ago. The loss is estimated at $25,000, half of which was covered by insurance.

H. E. Tidmarsh, who is widely known among the paper makers in the United States and Canada, and who for a number of years has been identified with the manufacture of paper making machinery, has been appointed general superintendent of the Green Bay Barker Company, at Green Bay, Wis., and the Canadian Barker Company, at Sault Ste. Marie, Wis. The companies manufacture Green Bay Barkers, international grinders, and a full line of pulp mill machinery, so Mr. Tidmarsh will be able to meet the requirements of pulp manufacturers in all respects.

The Schmidt & Ault Paper Company has purchased all of the paper mill machinery owned and operated by the National Roofing Company at Ely, Pa. It is the intention of the purchasers, after having the machinery repaired and overhauled, to instal it in connection with its already large plant at York, Pa.

Work on the new mill of the Chesapeake Pulp and Paper Company at Westport, Va., is progressing rapidly. H. W. Nichols, vice-president of the Fox Paper Company, is the president of this new concern.

S. D. Warren & Company, manufacturers of book papers, have given a contract to the Dodge Manufacturing Company of Boston, for a 40 horse power Dodge rope drive for use in their Copscook mill, at Gardiner, Me. The driving sheaves will be 52 inches in diameter with three grooves each. Nine hundred feet of manila impression rope 1¼ inches in diameter will be used for the job.

It is understood that Fred Gardner has completed negotiations for the purchase of the controlling interest in the Warsaw Paper Box Co. at Warsaw, N. Y. He now owns $24,000 out of the total issue of $27,000 stock of the company. —M. E. B.

SPANISH RIVER WINS AGAINST EDMUNDS.

Judge Geiger, in the Federal Court at Milwaukee, dismissed the plaintiff's claim for $100,000 in the case of E. A. Edmunds, Appleton, Wis., former chairman of the Republican State Central Committee, against the Spanish River Pulp and Paper Company, Limited, of Ontario.

Mr. Edmunds had paid $100,000 to bind a $2,150,000 purchase of land in the northern part of the State, including certain water right privileges. He claimed that after the completion of this deal he discovered that the Canadian company's title to these water rights was defective. He claimed that the $100,000 paid should be treated merely as security for the payment of the rest of the purchase price, and not as a part of the purchase price.

The judge in his decision said that the money should be treated as part of the purchase price, and that as there was nothing to show that the company is unwilling to carry out its part of the contract. Mr. Edmunds cannot recover. The sale was consummated on April 20, 1907, and the matter has been under litigation for some time.

The Forestry Service of British Columbia points out that their experience has proven conclusively that forests act as a bar to avalanches. Numbers of cases have come to their notice of this newest argument for conservation of forests.

CANADIAN PRINT.

The New York Evening Post is now using Canadian paper, having made a contract with the J. R. Booth mill to supply it with news print. This business was formerly handled by the American mills, and while not of large proportions, reflects the inroads that Canadian paper has made on the American market. The Evening Post uses a special paper, it being of a higher grade than the ordinary news print, and is of a special tint.

It is said that over 400 tons of Canadian paper is now coming into this country each day and that most of this paper is going out west, where prices are being cut, some paper being placed as low as 2.05 and even 2.00 flat. Taking this in comparison with the International price, which is said to be 2.25, it can readily be seen the drastic competition that the free entry of this paper affords.

It is being stated in news print circles that it is not altogether improbable that there will be a shortage of news print this fall, owing to the diversion of machines to other products, and the numerous setbacks news print mills have received in the form of accidents to plants.

The amount of paper on hand, according to some authorities, does not fully cover fifteen days' consumption and the mills are not fully prepared to supply the needs of the country in case of an enforced shutdown this summer by drougth. Mills in the past have endeavored to keep a supply of paper on hand to meet such an emergency, but the present heavy demand and the smaller amount of manufacture is causing a situation which is the subject of much concern.

The following inquiries have been received by the Department of Trade and Commerce, Ottawa, whom those interested should address, giving number:—

306. **Sulphite pulp.**—A large foreign firm in Yokohama wishes to secure large quantities of bleached, unbleached and easy bleached sulphate pulp.

307. **Box boards.**—An Edinburgh firm inquires for fifteen tons of box boards suitable for making cake boxes, as used by bakers and confectioners.
manufacturers of pulp boards for box making.

308. **Pulp boards.**—A Glasgow firm inquires for purchase a cheap, coarse wrapping paper. The same firm also inquires for news offcuts.

310. **Printing paper.**—A Glasgow firm inquires for samples and quotations of printing (news) paper; also any other class of paper suitable for the British market. Manufacturers only are inquired for.

311. **Bank and bond paper.**—A Glasgow firm inquires for quotations on bank and bond paper, c.i.f., Glasgow.

312. **Paper.**—A Glasgow firm inquires for all kinds of paper suitable for the British markets. Please send samples and prices, c.i.f., Glasgow.

319. **White enamel paper.**—A Glasgow firm inquires for exporters of white enamel paper. Sample at Department of Trade and Commerce, Ottawa.

320. **Paper.**—A Glasgow firm asks for samples and quotations on all kinds of paper.

324. **Printing paper.**—A Glasgow house wishes to be put in touch with Canadian exporters of printing paper. Samples and prices asked for.

325. **Wrapping paper.**—A Glasgow wholesale house inquires for wrapping paper and all kinds of paper used in stationery business.

328. **Wrapping paper.**—A Glasgow firm is in a position to purchase wrapping paper.

329. **Sulphate papers.**—A Glasgow house inquires for Canadian exporters of sulphate papers.

PULP AND PAPER NEWS

The new proposed parcels post system proposed for Canada will mean a lot for wrapping paper. Paper mills should lend the proposed bill their united support.

Fire caused damage to the extent of $10,000 to the plant of the Paterson Manufacturing Company, manufacturers of roofing felts and building papers. The origin of the blaze is unknown.

Messrs. Bertrams, Limited, paper making engineers, St. Katharine's Works, Edinburgh, have just shipped to Australia the complete plant to equip a paper mill with machinery for the manufacture of box boards.

A bulletin which has just been issued by the Census Department, dealing with agriculture in the Province of New Brunswick states that in 1911 there were 2,445,-068 acres of land in natural forest. In 1901 the total was 2,561,494.

Mr. P. A. Trost and assistant, of the staff of Geo. F. Hardy, New York, spent last week at Iroquois Falls, with Mr. Wm. Whyte, the manager of the Abitibi Pulp & Paper Co. They report exceptionally good conditions for a cheap dam construction.

Process Engineers, Ltd., Montreal, have been incorporated for $100,000. Chemical, electro-chemical, mechanical, metallurgical, electrical, construction and contracting engineers. Specializing in pulp and paper mill processes, their exploitation and management.

Mr. O. A. Porritt, general manager for Price Bros. & Co., Ltd., has tendered his resignation, to take effect very soon. J. A. Ryan, office manager and a number of the members of the staff have also resigned. The management of the mill, it is said, is to be completely reorganized.

Edward Lloyd, Ltd., have closed their Montreal office, and request that communications be addressed to their home office, 4-5 Salesbury Court, London, England. The company will continue to send its representatives to this country, and will continue its Canadian business in this way.

The Beckett Paper Company mill at Hamilton, Ohio, is not expected to resume operations for at least three weeks. It is stated that the flood caused heavy damage to the plant. An unofficial report states that the power plant building had collapsed and that reconstruction work was being pressed.

The Laurentide Co., Limited, propose to establish a traffic department immediately. Mr. J. F. Patten, a former Montreal man will be in charge of the New York office now being opened as announced in our last issue. The Montreal office, Canada Life Building, in charge of Mr. J. H. A. Acer, will also be considerably enlarged.

G. B. Steffanson, of Windsor Mills, Quebec, has been making an inspection of the plant of the Miramichi Pulp & Paper Company at Chatham, for a group of Ontario pulp and paper men who have taken an option on the property. It is believed that under the new law relating to timber licenses the mill can be successfully operated.

The Canadian Pulp & Lumber Company, Limited, incorporated capital twenty-five thousand dollars, divided into 250 shares of $100 each, head office Latchford, District of Nipissing, Ontario. Provisional directors of the company: J. S. Lovell, W. B. J. Ellis, Robert Gowans and J. J. Dashwood, to do business in pulp and lumber.

Riordon Pulp & Paper Company, Limited, securities have been listed on the Montreal Stock Exchange. The Riordon Company has an authorized capital stock of $1.500,000 preferred and $4,500,000 common. $1,000,000 of the preferred being issued and all the common; it has also $2,500,000 of debentures, of which $1,500,000 has been issued.

Pariseau Freres, Limited, is a new concern with a capital stock of $400,000 and headquarters at Montreal, Que., the operations of which will be devoted principally to the sawmill business, but also to a certain extent to the manufacture of pulp and the exploitation of pulp wood lands. The incorporators are: Honorius and Zepherin Pariseau, manufacturers; Majorique LaBonte, accountant; Stanislaus Pariseau, civil engineer, and Joseph Pariseau, commercial traveler, all of Montreal.

The Riordon Pulp & Paper Company have started their first digester in their new plant at Hawkesbury, Ont., and the second will be running in a few weeks' time. It has also been arranged to put in two additional 12½-ton digesters, which will be in operation by the fall, thus materially increasing the output of sulphite pulp. The Merritton plant of the company, which recently suffered from fire, will be running again at a much earlier date than was at first expected, the company having arranged to restore the damaged portion with all possible speed.

The Manouan Lumber, Power & Pulp Co.'s water power and timber limits holdings, which were put up at auction on April 3, at the auction room of the House of Browne, Limited, in Montreal, were withdrawn, as the bid of $1,000,000 was said to be considerably short of the reserve bid. The owners are said to have valued their holdings at three times the figure mentioned. The pulp wood trust is said to contain sixty-five square miles, and is situated on Lake Kemp in Champlain county, Que., and near the C. N. R. station at La Tuque. The water power is located 4½ miles from the confluence of the rivers Manouan and St. Maurice upon the former, and 5.000 horse power is said to be easily convertible into kinetic energy.

What will be a combination of a paper box and chewing gum manufacturing business will be carried on by the Canada Carton Company, Limited, of London, Ont., incorporation of which is also announced. The capital stock is $50 000, and the incorporators are: Alexander LeBreton Woonton, box maker; Edouard Gordon De Wolf, accountant; Claude Brown, dental surgeon; Edgar Hudson Nelles, insurance agent, and Michael Patrick McDonagh, solicitor, all of the city of London. Some of the powers granted to the company are: "To manufacture and produce, import, export, purchase, sell, dispose of and otherwise deal in wall paper, paper box board and paper boxes, pails, bags, cartons, labels and printed matter, and also all kinds of confectionery and chewing gum.

The first carload of sheathing paper manufactured by the Dryden Timber & Power Co. was shipped to Winnipeg last week.

Manager Beveridge is now working all the units of the pulp mill harmoniously, and they are able to run to half the capacity satisfactorily.

Vice-President Bonfield, left last Tuesday for Chicago. From there he came to Toronto to attend the general annual meeting of the shareholders of the company, yesterday, April 14th.

The second 1,000 h.p. generator has been installed in the power house, which now brings the company's available electric energy to 2,000 h.p.

The entire holdings of the St. Lawrence Pulp & Paper Company, Limited, Ottawa, in liquidation, will be sold in two parcels, en bloc, as follows: Parcel No. 1, comprising 60 h.p. boiler, 4 beaters, Jordon engine, 2 flat screens, 2 wet machines, plunger pumps, pressing machine, 1 stack calender, 1 rotary cutter, 1 two-ton elevator, drying trucks, pulleys, shafting, hangers, belting, piping, safe and office furniture and all other equipment of the company's mill at Ottawa. Parcel No. 2, comprising the right and privilege granted by order in Council of date April 14, 1908, to remove the accumulated pulp material formed in the bed of the Ottawa River, near Hawkesbury. Tenders in writing for the purchase en bloc of each parcel separtely will be received by H. Blakeney, liquidator at his office, Hope Building, Ottawa, up to Tuesday, the 22nd of April. Mr. E. D. Alvord, the manager, has left the city after handing over the affairs of the company, and is now in Hartford, Conn.

Deputations from manufacturing towns lying along Ontario rivers will shortly wait upon the Government to request aid in solving the problem of spring freshets and the increasing danger of costly floods. The local problem has naturally been lifted into the limelight by the Ohio catastrophes, but such accidents as the breaking of the Barber Paper Mills' dam at Georgetown recently through the sudden rising of the Credit River have made the cause especially pressing. Ontario pulp and paper industries are seriously menaced every year and some scheme of permanent or emergency reservoirs will have to be adopted, and likely with the financial aid of the Government. Ontario, like numerous other areas, has been depleted of its forest growths, swamps have been drained, and with the inevitable result. It is pointed out that the cost of periodical disasters would far more than pay the interest on even an elaborate scheme of prevention.

HAND OR MACHINE PAPER TESTING.

Every one experienced in paper, printing or advertising work knows that paper is one of the most difficult of all materials to properly judge. Experience will enable you to determine the printing qualities, finish, and in fact, all surface perfection or imperfections, but eye and finger judgment cannot accurately determine the body, substance or, in short, the strength of paper, without the aid of some mechanical device.

You may have trained your fingers to instantly detect the difference between a 13-lb. and 16-lb. or a 14-lb. and 20-lb. paper, but fingers are not infallible.

In order to overcome these inaccuracies, and to meet the ever-increasing need for accurate instruments, to test the strength and thickness of paper stock, the Ashcroft Manufacturing Company, New York, brought out the Ashcroft Paper Tester and the Ashcroft Thickness Gauge.

Both of these instruments have met with marked success, and hundreds of progressive printers, paper mill men, purchasing and publicity departments, etc., are now specifying "Ashcroft Test" on all their specifications for paper stock, Bristol board, card board, etc.

In order to give all concerns a better opportunity to learn how money can be saved, trouble avoided, and better qualities of paper stock secured the use of these Ashcroft protective devices, the markers have engaged booth No. 74 at the National Printing and Advertising Exhibition, at the New Grand Central Palace, New York City, April 19th to 26th, 1913. At the company's exhibit, a complete line of Ashcroft Paper Testers and Thickness Gauges will be demonstrated by experienced paper men; there will also be several unusual features in the exhibition, which will well repay an inspection while at the show.

THE PAPER INDUSTRY OF NORWAY AND SWEDEN.

A review of the pulp and paper markets in Norway and Sweden in 1912, which appears in the December 21st, 1912, issue of Farmand, contains the following statements regarding pulp production:

The production of sulphite cellulose in Norway and Sweden for export and for domestic consumption has been in recent years as follows, the figures being approximate estimates in tons of 2,000 lbs.:

1912, 992.079; 1911, 824.165; 1910, 809,096; 1909, 615.089; 1908, 686,739; 1907, 570,997; 1906, 440,924.

The production for 1913 i sestimated at approximately 1,025,148 short tons.

The production of sulphite cellulose in the two countries was 188,495 short tons in 1911, and is estimated at about 203,927 short tons for 1912 and 212.746 short tons for 1913.

The most recnt of the new sulphite mills, which were erected in the two countries as a result of the market conditions in 1908, has come into full operation during 1912 and will reach its full production in the course of 1913.

The increase in production for the year 1912 is estimated at about 149,914 short tons, but the estimates for 1913 indicate a further increase of only 33,069 short tons.

J. R. BOOTH, EIGHTY-SIX.

(Special to the Pulp and Paper Magazine.)

Ottawa, April 13.—Hale and hearty as most men half his age, J. R. Booth, the veteran lumberman and paper manufacturer of this city, on Saturday last celebrated the 86th anniversary of the day of his birth. He was presented by his staff with 86 magnificent roses as a mark of their remembrance of the occasion. A unique feature of the anniversary, when his many years are considered, is the fact that he spent the major portion of it at work in his mills.—Mac.

The estimated output of sulphite cellulose in Norway and Sweden, including bleached pulp, in 1912, is about 900,000 tons, while the estimated production for 1913 is reported to reach 930,000 tons. Sulphate cellulose is estimated at about 185,000 tons in 1912 and 193,000 tons in 1913.

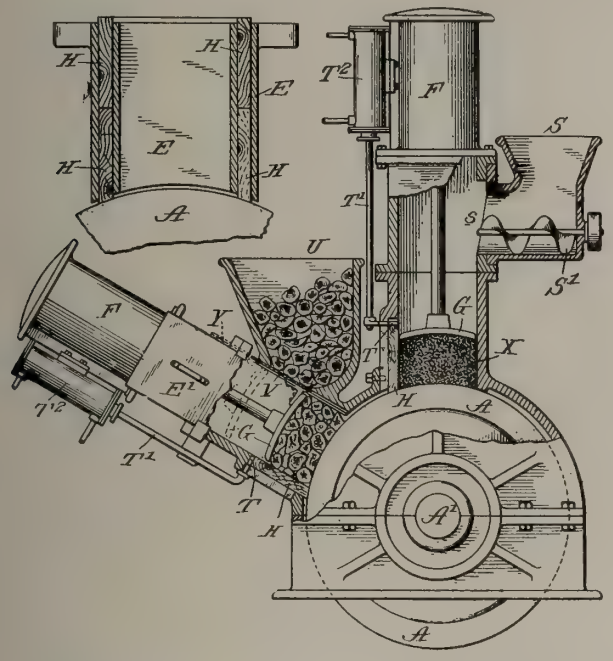
NEW PATENTS

All patents are specially compiled for the PULP & PAPER MAGAZINE. Those of United States are by Davis & Davis, Patent Attorneys, Washington, D.C. Full particulars with drawings may be had by addressing the Commissioner of Patents, Washington, D.C., enclosing five cents per patent. Canadian patent particulars may be obtained from the Patent Office, Ottawa. In all cases give number of patent. We also carry brief descriptions of important English, French and German patents

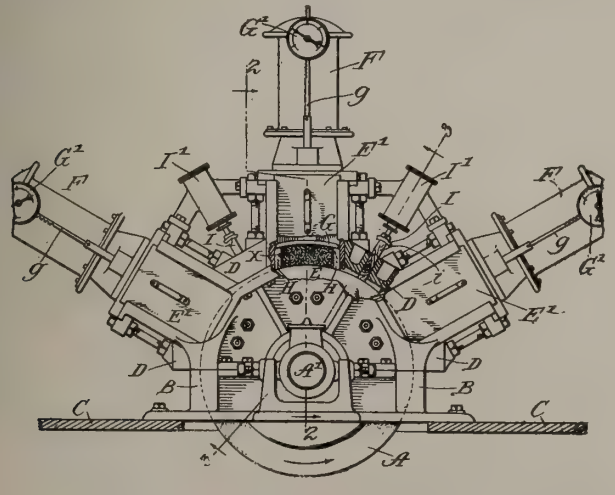
PULP WOOD GRINDER.

U. S. Patent No. 1,057,791. George S. Witham, Hoosick Falls, patentee.

This invention relates to machines of the kind commonly employed to grind wood or other fibrous material used in the manufacture of paper pulp. The most gen-



erally used machine of this class comprises a rotary grindstone against which the wood, contained in pockets, is pressed by followers operated usually by hydraulic power. As the relatively large pieces of wood are ground the "mechanical wood pulp," as it is called, falls into a pit from which it is taken for



further treatment. In these machines, however, as heretofore constructed, the walls of the pockets being of metal have necessarily been held out of contact with the stone and often the distance between the periphery of the stone and the adjacent edges of the pocket walls has been so great that chips, segments and small pieces of wood of various shapes and insufficiently ground have escaped the grinding operation and fallen into the pit with the properly ground pulp. These objections to the machines have been to some extent remedied by adjusting the pockets relatively to the stone, but such adjustments are difficult and are often neglected.

The primary object of this invention is to so improve the machine that the escape of improperly ground pieces is automatically prevented. A general way of accomplishing this result and also a number of specific devices which may be employed for this purpose. The general way is to provide linings or gates for the pockets, which, while permitting the ground material to pass from the pockets confine the unground material and prevent its escape to the pit. These linings or gates are pressed against the periphery of the stone and are of such material that they are themselves ground away as the operation progresses. The linings or gates may be pressed against the stone by their own gravity, by hydraulic means, by mechanically-operated feed mechanism, and in various other ways, some of which are illustrated in the drawings.

MIRAMICHI PULP AND PAPER CO., LTD.

The Chatham World says, regarding the visit of Mr. Steffanson, of Windsor Mills, to the old mill, and in connection with the rumors of sale by the Bank of Montreal:—

"It is the fashion every time that a stranger is seen in the vicinity of the shut-down pulp mill to jump at the conclusion that its sale has been effected and that it is to resume operations at once. The public has grown somewhat weary of these false reports, and news editors of the St. John dailies long ago threatened to put them under the head of 'Chestnuts from Chatham.'

"But there is really some basis for the hope that the mill is to be reopened soon. Mr. Clark, Maritime Provinces Superintendent of the Bank of Montreal, who has been for months endeavoring to interest paper and pulp men in the property, has succeeded in getting three paper making companies to take the matter into serious consideration and hopes to carry the negotiations to a successful conclusion.

"The great sticking point was the uncertainty in regard to the timber-lease policy of the Government. The leases had only five years to run, and capitalists wanted to know what the Government proposed to do in regard to their renewal.

"When it became known that the Government intended to renew the leases without competition, Mr. Clark had no difficulty in getting paper manufacturers to take into consideration his offer to sell the mill. Then, when the Government bill was announced, and it appeared that the holder of a pulp and paper lease would have to build a paper mill within five years, the fat was all in the fire again, as the prospective purchasers did not intend to build a paper mill in Chatham. They want this mill only as a producer of sulphite pulp for the paper mills they have elsewhere."

The local Government, however, assures them that this can be arranged satisfactorily.

THE MARKETS

TORONTO MARKETS.

The feature of the local situation is the scarcity of sulphite. None is to be had for immediate delivery, and only small amounts of imported are available at all. The Canadian mills are all sold up at good prices, but slightly below the present ruling.

Ground wood has advanced about a dollar and rules firm. Heavy stocks are in hand, but the mills are firmly maintaining prices, expecting improved conditions due to the short cut this winter.

Bags are still in unsettled state, and cutting continues regardless.

Boxboard is bare, none is offered for immediate delivery, and strong inquiries are received for quotations. All mills are sold up for the next few months delivery.

News has softened slightly, but promises to stiffen for contract prices under the new American tariff prospects.

Quotations, f.o.b. Toronto, are:

Paper.

News (rolls) $43 to $45, according to quantity.
News (sheet) $45 to $50, according to quantity.
Book papers (carload) No. 3 4.10 to 4.50c
Book paper (broken lots) No. 3, 4¼c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2 5c to 5½c.
Book papers (carload) No. 1, 5c. to 6¼c.
Book papers (broken lots) No. 1 5½c to 6¾c.
Writings 4½c. to 7½c.
Sulphite Bond, 6½c. to 8½c.
Fibre, 3c to 4c.
Manila, B., 2½c to 3c.
Manila No. 2 2.85c to 3.50c.
Manila, No 1 3c to 4c.
Kraft, 4c. to 4¾c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $48 to $49, delivered in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.60.
No. 1 Mixed Shavings, 60c.
White blanks, 85c.
Ordinary Ledger Stock, $1.20.
Heavy Ledger Stock, $1.50.
No. 1 book stock, 90c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.15.
No. 1 print manillas, 60c.
Folded news, 47½c.
Over issues, 55c.
No. 1 clean mixed paper, 40c. to 42½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.65.
Ordinary satinets, 87½c.
Floc. satinets, 97½c.

MONTREAL MARKETS.

Paper.

News, $41 to $43, delivered in United States.
News, $41 to $42 for large orders, $44 to $45 for small orders.
Newsprint, sheet, $46 to $50 at mill.
Book papers, carload lots, No. 3, 4½c. to 4¾c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3c. to 3½c.
Broken lots, No. 2, 5¼c. to 5½c.
Carload lots, No. 1, 5½c. to 6¼c.
Broken lots, No. 1, 6¼c. to 6¾c.

Wrappings.

Fibre, 3¾c. to 4c.
No. 2 manilla, 3½c. to 3¾c.
No. 1 manilla, 3½c. to 4¼c.
Kraft, 4¼c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.80 to $1.85.
No. 1 soft white shavings, $1.65 to $1.75.
No. 2 soft white shavings, $1.15.
Mixed shavings, 55c. to 60c.
White blanks, 90c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c. to 55c.
Manila envelope cuttings, $1.05 to $1.10.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 50c.
Crushed news, 45c.
~~Crushed news~~
Good mixed paper, 40c. to 42½c.
Old white cotton, $2.60 to $2.75.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.45 to $3.55.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.55 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.60 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.50.
New light flannelettes, $3.75 to $4.25.
Flock satinents roofing stock, $1.00.

THE BRITISH MARKETS.

(Special to the Pulp and Paper Magazine.)

London, April 10, 1913.

Owing to the Easter holidays very little business has been transacted in the British markets during the past two weeks. The paper mills, however, are working very freely and the steady rate of employment shows that they are fully replenished with orders from government and other sources. "News" printings are going from two cents to a little over three cents, according to grades, per lb.; esparto papers, eight cents to twelve cents per lb. according to quality; imported printings and writings about three cents per lb., and packings and wrappings $17 to $17.50 per ton. The net price largely depends on the discount allowed.

The mechanical pulp market is firm and somewhat depressed. Just at the moment sellers have to accede to buyers' offers which are not considered very profitable. Consignments arriving in England are mostly contract deliveries, but enquiries are already being made for May. It is stated in London that Scandinavians have thrown most of their surplus stocks on the markets to get them off their hands.

* * * *

Since the beginning of March 889 tons of mechanical (wet) was imported into the United Kingdom from Halifax, N.S., and 128 tons of bleached chemical from the United States.

* * * *

Sulphites and sulphates continue in good demand. Importers say that the consumption is growing daily and the supply is inclined to be on the limited side. Owing to the brisk demand from American sources British consumers will be compelled to fix up for their supplies for 1914.

* * * *

The chemical markets are featureless, and the holidays have dislocated business. Prices are unchanged since last report. In the mining markets China Clay is as dear as ever, and the supply not equal to the demand—so much so that in January America had only 108 tons, according to the Government return, when treble that amount could have been easily done with. As a matter of fact China Clay makers are sold for a long while ahead.

* * * *

Rags, bagging, and other paper stock still keep dear and the demand heavy. Large shipments of waste papers are being made for the States. News from Continental sources shows that stocks are not large, and for high-grade rags good prices are being demanded. The shipments of rags and other paper stock up to the end of the first three weeks in March, are as follows: Canada, 170 tons; United States, 3,701 tons.

* * * *

Pulp men and mill owners in Canada should take notice that the railways in the United Kingdom have increased their charges for warehousing. Several other new rates have also been introduced, with which they should become acquainted if paying for storage or freightage on this side.

NEW YORK MARKETS.

(Special to the Pulp and Paper Magazine.)

New York, April 13, 1913.

The serious floods and storms throughout the paper making district during the past two weeks has greatly curtailed mill production, and in consequence consumers have not been drawing as freely on their sulphite fibre contracts as heretofore. The demand for additional supplies in some quarters has not been quite so pronounced, but this feature of the market is only of temporary duration, and it is expected that before the close of the month paper mills will be quite active again and drawing steadily on their old contracts for pulps and other supplies. The market continues, however, to reflect a very strong tendency, as foreign packers are not disposed to ease off in their prices, and in many cases are asking even higher levels than are now being quoted. Scandinavian pulp in particular is very strong. Reports from abroad show that supplies are very limited and makers are not over anxious to dispose of their remaining 1913-14 output without a substantial increase in present prices. With possibly one or two exceptions, domestic mills also are well sold out for the balance of the year, and quotations for these grades are firm and high. Importations into the United States during the month of February, which have just been compiled by the Government, amounted to 4,262,501 lbs. of Unbleached Chemical Pulp from Canada, valued at $79,635, and 799,059 lbs. of Bleached, from Canada, valued at $21,449. There were also brought in from other countries, 60,656,260 lbs. Unbleached, valued at $960,726, and 18,941,713 lbs. Bleached, valued at $424,525.

In discussing the status of the ground wood market, a leading manufacturer stated this week that conditions were featureless. Though water has been more than plentiful during the past fortnight, grinders have in many cases been shut down on account of the swollen rivers and floods. This feature, however, may tend to strengthen the market, although it is understood that most mills are pretty well stocked up. Stocks on hand at the mills making pulp for sale only are heavier now than they have been for many years at this period, and makers are willing to accept almost any figure to move them. Grinders are hoping for the best, and are rather optimistic in the belief that the coming summer will witness a very strong demand, due to the greatly curtailed logging operations. Importations during the month of February amounted to 13,994,046 pounds free of mechanical ground wood, valued at $111,739, and 3,178,330 pounds dutiable, valued at $25,288.

All descriptions of old waste papers are experiencing a continued good demand. Book stocks in particular are moving freely, with stocks barely sufficient to cover daily inquiries. Prices are being firmly maintained, and mills are taking all stocks that are offered. Old and new manilas also are passing into consuming channels in good volume, and soft and hard shavings continue to reflect a strong inquiry. Board mills at present are very active an dare drawing steadily on their contracts for waste papers. Common stocks are not accumulating, and in many cases local packers are taxed in filling their orders.

Pulp.

Ground wood, No. 1, $16 per short ton, f.o.b. mill.
Ground wood, No. 2, $14 per short ton, f.o.b. mill.
Unbleached sulphite, domestic, $2.15 to $2.30 delivered.
Bleached sulphite, domestic, $3 to $3.15, delivered.
Unbleached sulphite, imported, $2.05 to $2.30, ex dock, N. Y.
Bleached sulphite, imported, $3 to $3.25, ex dock, N. Y.
Bleached sulphate, imported, $2.60 to $3, ex dock, N. Y.
Bleached soda pulp, domestic, $2.20 to $2.35, delivered.
Kraft pulp, imported, $2 to $2.20, ex dock, N. Y.

Paper.

There has been no relaxation of the firm tone which has characterized the market for all grades of paper of late. On the contrary trading has been active and dealers are optimistic in regard to trade outlook. Prices in all descriptions have been thoroughly maintained. Floods during the past three weeks have caused many of the mills to shut down, and in consequence several hundred tons were taken off the market for a few days. This condition, however, has been mostly relieved, and mills are now being operated on a normal basis. Mills in the east which were not so hard hit with the floods as those in the west, have been taking on orders at a rapid pace, and in sufficient quantities to keep their machines operating on a good basis for some months to come. Aside from the temporary demoralization to the trade on account of the inadequate traffic facilities, the outlook for the future is very bright. During the period of disasters the newspapers and periodicals were in the market for heavy additional supplies of roll and sheet news, and the volume of business transacted was very heavy. Keen competitive methods continues, however, to govern the contract news market. This is due chiefly to the Canadians invading the local field with prices much less than those of the American manufacturers. The supply of side run news is rather limited at present and prices are very firm at $2.15. Kraft papers continue to reflect a steady inquiry. Mills report from four to five weeks behind in filling their orders. Manilas are in slightly better demand than last report-

ed on, though movement could be better. Orders for both Manilas and fibres are numerous, but small, which indicates that consumers are buying as needed only. No. 1 white tissues are without change, movement is of fair volume and 42½c. continues to rule firm. Manila tissues are comparatively firm, but some few mills are inclined to underquote when actual business is in sight. Toilets are being well maintained on a good seasonable volume of inquiries. The board mills are quite active at present, which shows that this grade of paper is meeting with a steady call.

Quotations are as follows:

News, rolls, transient business, $2 to $2.10, f.o.b., mill.
News, rolls, contract renewals, $2 to $2.05, f.o.b., mill.
News, sheet, $2.15 to $2.25, f.o.b., mill.
Book papers, car lots, C. & S. C., $4 to $4.20, f.o.b., mill.
Book papers, car lots, M.F.S., $3.75 to $3.90, f.o.b., mill.

Writing paper, superfine, 11c to 13c, delivered east of the Mississippi River.

Writing paper, extra fine, 10½c, delivered east of the Mississippi River.

Writing paper, No. 1 fine, 9c, delivered east of the Mississippi River.

Writing Paper, No. 2 fine, 8c, delivered east of the Mississippi River.

Writing paper, engine sized, 4½c to 8c, delivered east of the Mississippi River.

Bond paper, 6c to 24c, delivered east of Mississippi River.
Linen paper, 7c to 18c, delivered east of Mississippi River.
Ledger paper, 8c to 30, delivered east of Mississippi River.
Manila, jute, 4¼c to 5c, delivered.
Manila, wood, $2.40 to $2.80, delivered.
Kraft, No. 1, $3.65 to $4.02½, f.o.b., mill.
Kraft, No. 2, $3.10 to $3.77½, f.o.b., mill.
Screenings, $1.75 to $2.25, delivered.
Boxboards, news, $31 to $33 per ton, delivered.
Boxboards, chip, $30 to $32 per ton, delivered.
Boxboards, straw, $32 per ton, delivered.
Wood pulp board, $42.50 to $45 per ton, delivered.
Tissue, white, cylinder, 42½c to 45c, delivered.
Tissue, white, fourdrinier, 45c to 50c, delivered.
Tissue, jute manila, 50c to 55c, delivered.

M. E. B.

UNITED STATES IMPORTS.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., April 13, 1913.

The statistical report of imports and exports during the month of February, and for the eight months ended February, prepared by the Department of Commerce and Labor, has just been issued.

This report shows that during the month of February there were 13,994,046 pounds of mechanical ground wood pulp brought into this country, free of duty, valued at $111,739, against 10,126,104 pounds, valued at $82,657 imported in February, 1911; and 3,178,330 lbs. dutiable, valued at $25,288, against 3,012,728 lbs., valued at $23,786 a year ago. During the eight months ended February 28, 258,598,679 lbs. were brought in free of duty, valued at $2,145,237, and 25,825,709 lbs. dutiable, valued at $207,081. During the eight months ended February 29, 1912, 270,067,637 lbs. were brought in free, valued at $2,194,173; and 62,543,966 lbs. dutiable, valued at $505,930.

The imports of unbleached chemical pulp from Canada amounted to 4,262,501 lbs. in February, 1913, valued at $79,635; against 3,308,679 lbs. in February, 1912, valued at $52,930. During the eight months ended February 28, 1913, 34,319,818 lbs. were brought into the States from Canada, valued at $613,417, against 15,696,033 lbs. valued at $258,545 during the corresponding period a year ago.

Imports of bleached chemical pulp during this period amounted to 799,059 lbs., valued at $21,449, against 699,379 lbs., valued at $17,006 in February, 1912. During the eight months ended February 28, 1913, 8,195,024 lbs. of this grade of pulp were imported, valued at $210,170, against 9,776,057 lbs., valued at $239,869 in the corresponding period a year ago.

During the period under review there were also brought into the States from countries outside of Canada, 60,656,260 lbs. of unbleached, and 18,941,713 lbs. bleached, valued at respectively $960,726 and $424,525. These are compared with the imports of the previous February of 40,474,573 lbs., valued at $600,979, of unbleached, and 9,862,677 lbs., valued at $208,512 of bleached.

The imports of pulp wood amounted to 66,370 cords, valued at $409,998, against 49,630 cords, valued at $280,890 in February, 1912. During the eight months ended February 28, 1913, there were imported 674,172 cords, valued at $4,616,107, against 614,452 cords, valued at $4,024,416 in 1912, and 594,109 cords, valued at $3,864,907 in 1911.

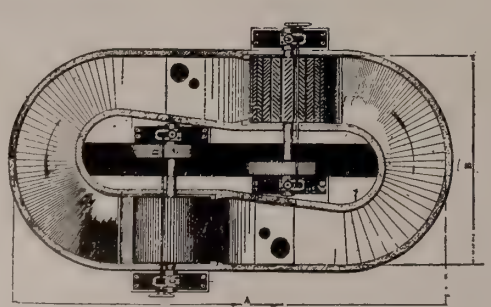
Imports of printing paper amounted to 26,042,043 lbs., valued at $526,066, against 8,973,250 lbs., valued at $188,693 in February, 1912. Of this amount 22,418,768 lbs., valued at $427,287, were brought in from Canada, as against 5,256,585 lbs., valued at $101,856. During the eight months ended February 28, imports from Canada of news print, valued at not above 2½c per pound, amounted to 129,349,289 lbs., valued at $2,453,287, as against 35,745,629 lbs., valued at $680,711 during the corresponding period a year ago.

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PAPER MAKERS' CHEMICALS.

(Special to the Pulp and Paper Magazine.)
New York, April 13, 1913.

The turn of the month has witnessed no appreciable change in the market for paper makers' chemicals, which reflects a steady tone, with all grades passing freely into their respective channels. Importations in many instances are passing out readily through stranding contracts, and generally speaking the market presents a healthy tone. The appalling conditiions created by the floods in the West, and in this State, have made the use of disinfectants necessary, and chloride of line, or bleaching powder, has commanded increased attention, the market responding to the improved inquiry. Below is a detailed report of the principal items.

Agalite—Conditions governing this market are without change. The demand is extremely good and prices are being firmly maintained. Mills are working at capacity and surplus stocks on hands are not heavy. Local distributors are very optimistic over the future and believe that the present good demand will continue for some time to come. F.o.b. mill prices rule around $9.50 to $10 per ton.

Bleaching Powder—The past two weeks has developed and increased inquiry for this item, and sales for out-of-town shipments have been on a considerably larger scale. The floods in the Middle West and Northern New York have created conditions necessitating disinfectants, and "chloride of lime" felt the force of an improved demand. Spot shipments were maintained at the close of the week at $1.35 by most sellers, although second hands were able to pick up an occasional lot at $1.30.

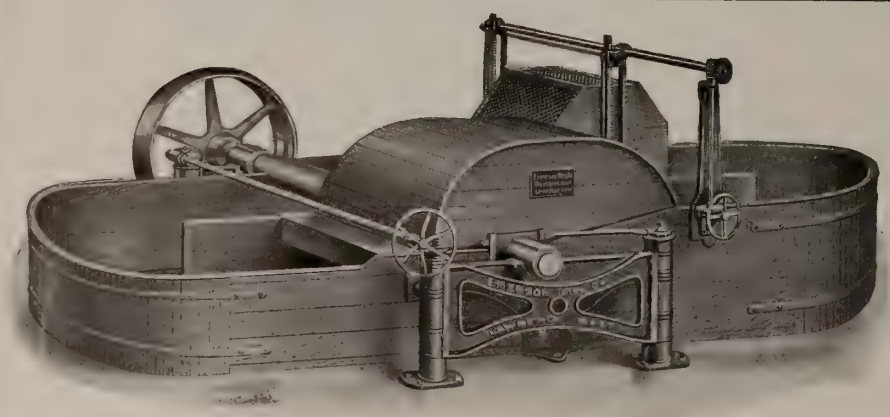
Caustic Soda and Soda Ash—The paper and other consuming industries are drawing freely on outstanding contracts, and aside from these a fair additional demand was reported during the interval. Regarding new contracts, the market is unsettled owing to competitive methods employed by the dealers to secure business. Quotations on Caustic Soda range from $1.50 to $1.55 for 76 and 78 per cent., basis of 60 per cent. Soda Ash is quoted at 60c. to 70c. per 100 lbs., basis of 48 per cent., according to packing, f.o.b. makers' works, in car lots; and 65c. to 75c. per 100 lbs. in less than car lots. The 48 per cent. test is quoted at 70c. to 80c. f.o.b. makers' works, in car lots.

China Clay.—The local market is devoid of any new features in this item. Arrivals are coming in slowly, but not sufficiently to meet the prevailing strong inquiry. Supplies in local hands are very limited, and dealers have been forced repeatedly to seek substitutes to fill their contracts. Prices are being firmly maintained on a basis of $11.50 to $18 per ton for the foreign grades.

Brimstone—While new business is not prompting unusual attention, there is a steady movement on old contracts for industrial purposes. The market is firm and prices may be repeated on a basis of $22 to $22.50 per long ton, according to point of delivery.

Rosins—There is no marked improvement in the demand for this item, but the trade is buying for requirements. Prices are purely nominal and can be shaded on actual business. The movement is disappointing since the trade is awaiting to see what will develop in Savannah, which rules above the local parity. Common to good strained at the close of the week was offered at $5.40, Grade E at $6, Grade F at $6.05, and Grade G at $6.10. Savannah prices rule at: Grade E, $5.20 to $5.22½; Grade F, $5.25 to $5.27½, and Grade G, $5.30 to $5.37½.

M. E. B.



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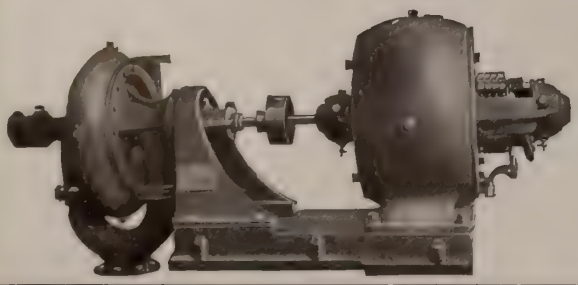
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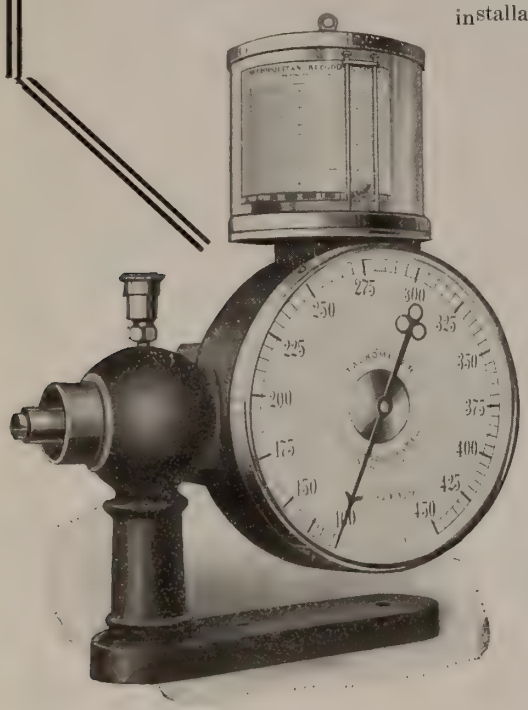
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Heimbach, Thos. Jos., Ltd., Duren, Germany.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

Jute Cloth
Wardlaw, T. D., Toronto, Ont.

MILL SUPPLIES CONTINUED

Laying Machines
Chambers & Simpson, Toronto.
Collis & Sons, J., London, Eng.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.

Twines
Wardlaw, T. D., Toronto, Ont.

MILL SUPPLIES CONTINUED

Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines

Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste

Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines

Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Kraft—

Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., Montreal Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—

McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—

Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—

Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,
Deputy Minister.

Department of the Interior, Ottawa,
December 20th, 1912.

PAPER MILLS CONTINUED

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Corrugated Paper—
Lazier Paper Mills, Ltd., Belleville.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag—
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Tissue and Toilet—
Eddy Co. The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst,

Minister of Lands, Forests and Mines,

Toronto

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Wood and Pulp Board—

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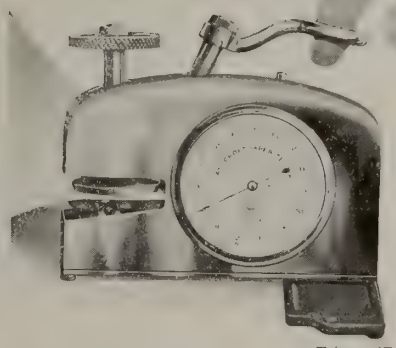
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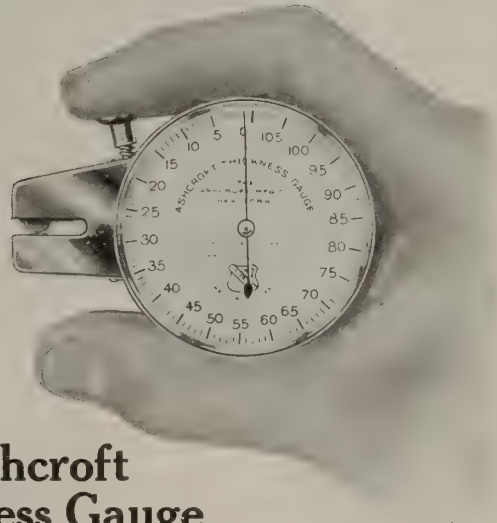
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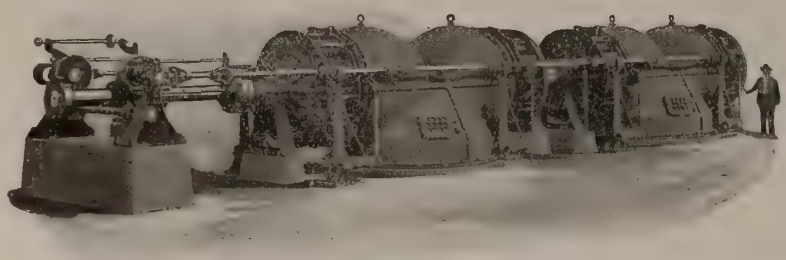
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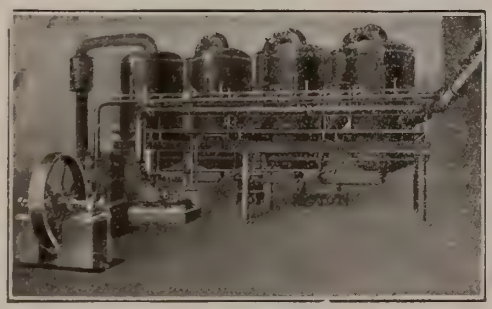
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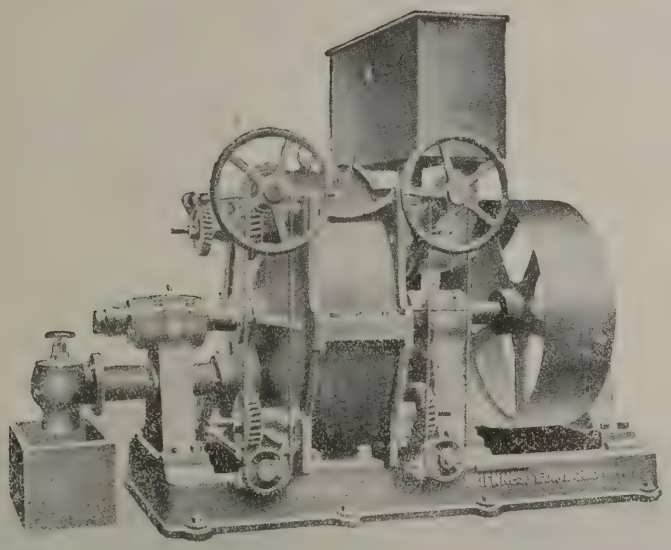
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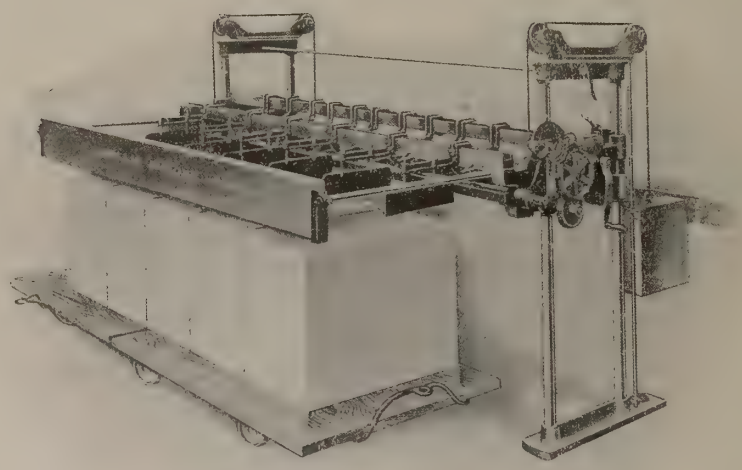
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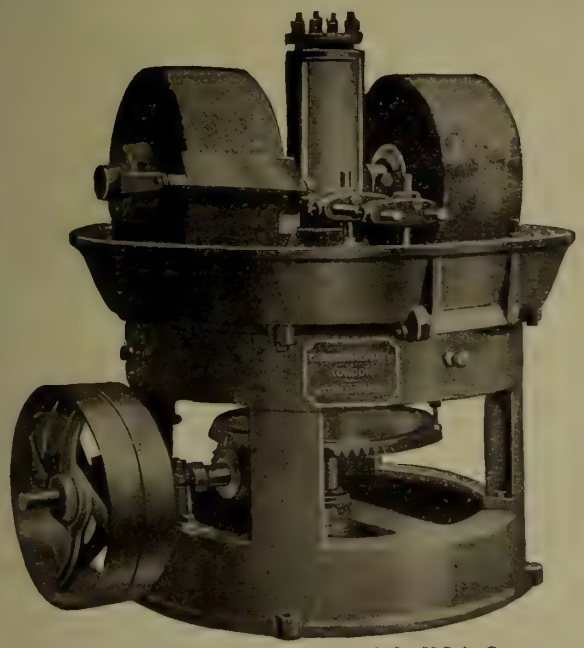
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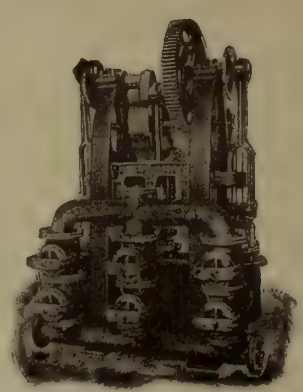
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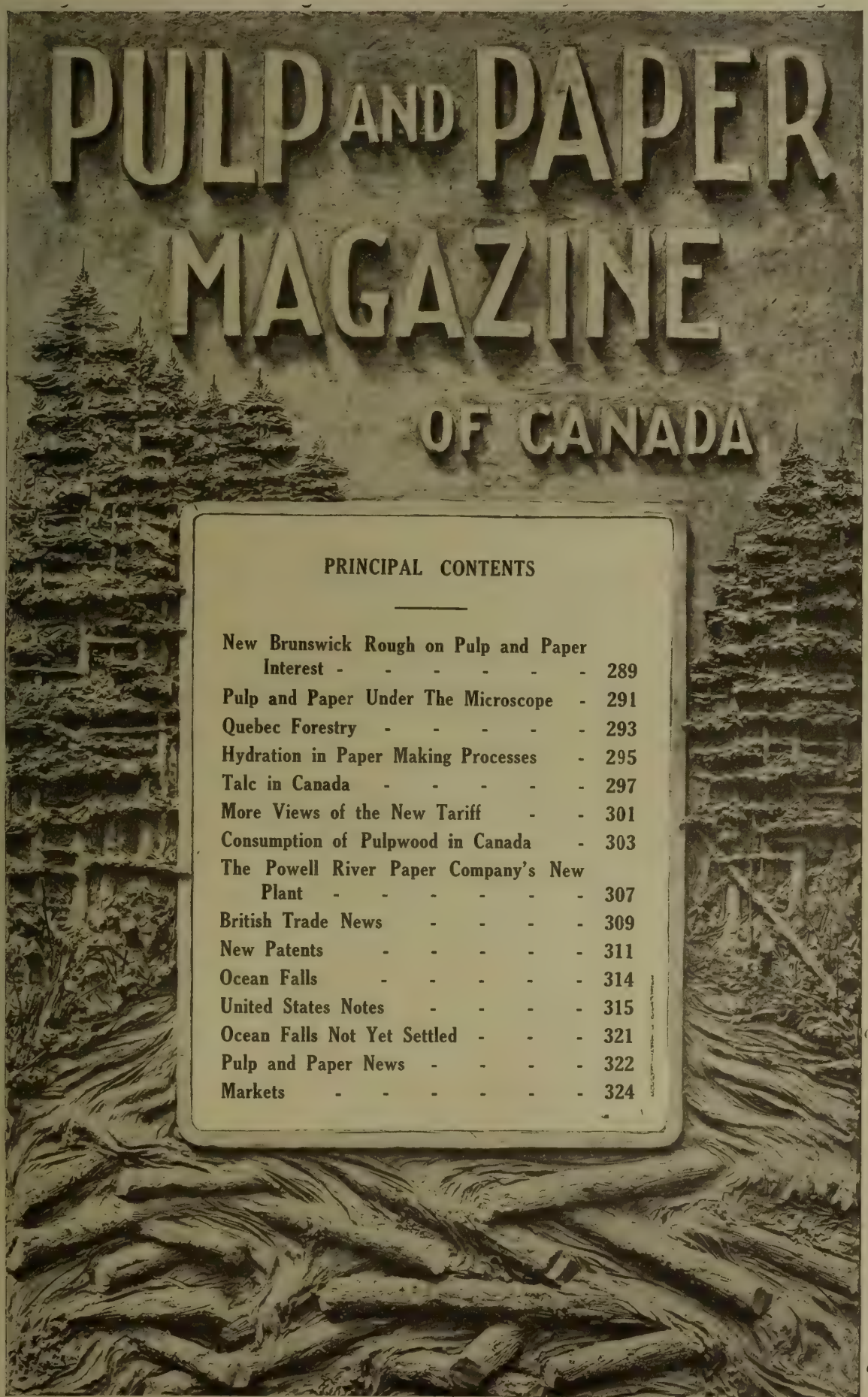
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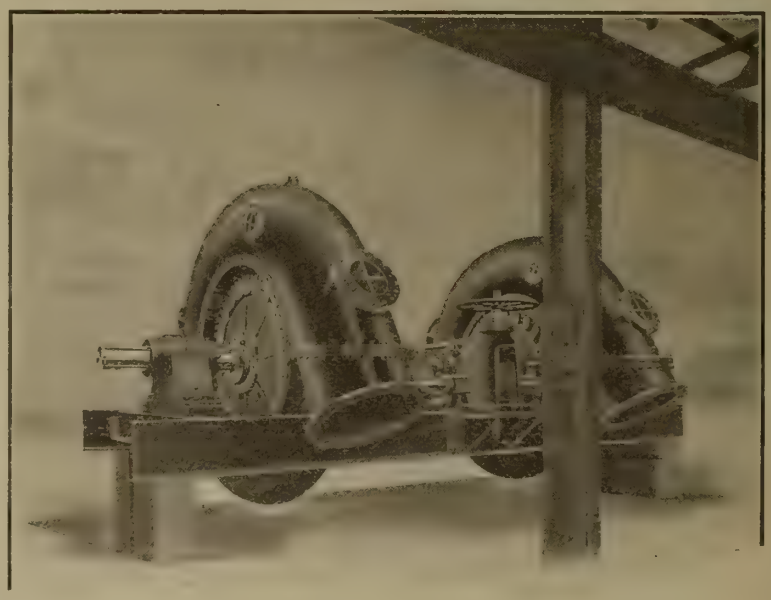
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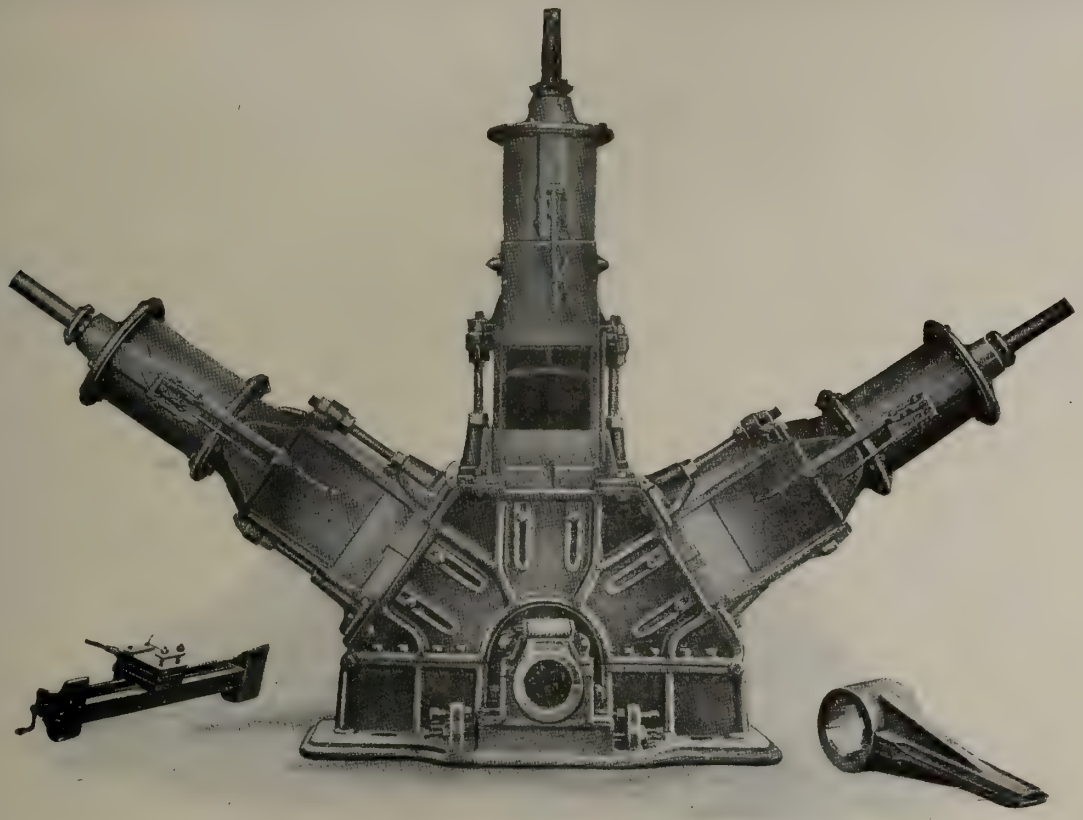
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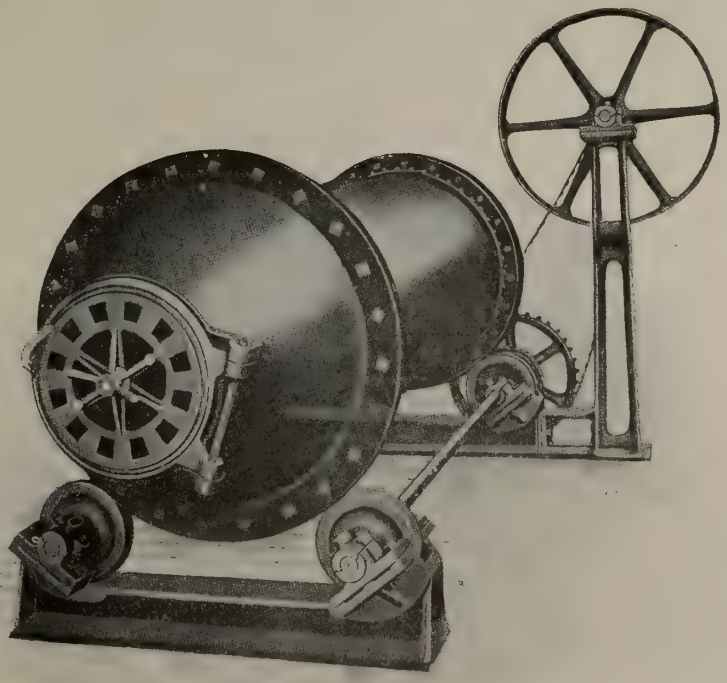
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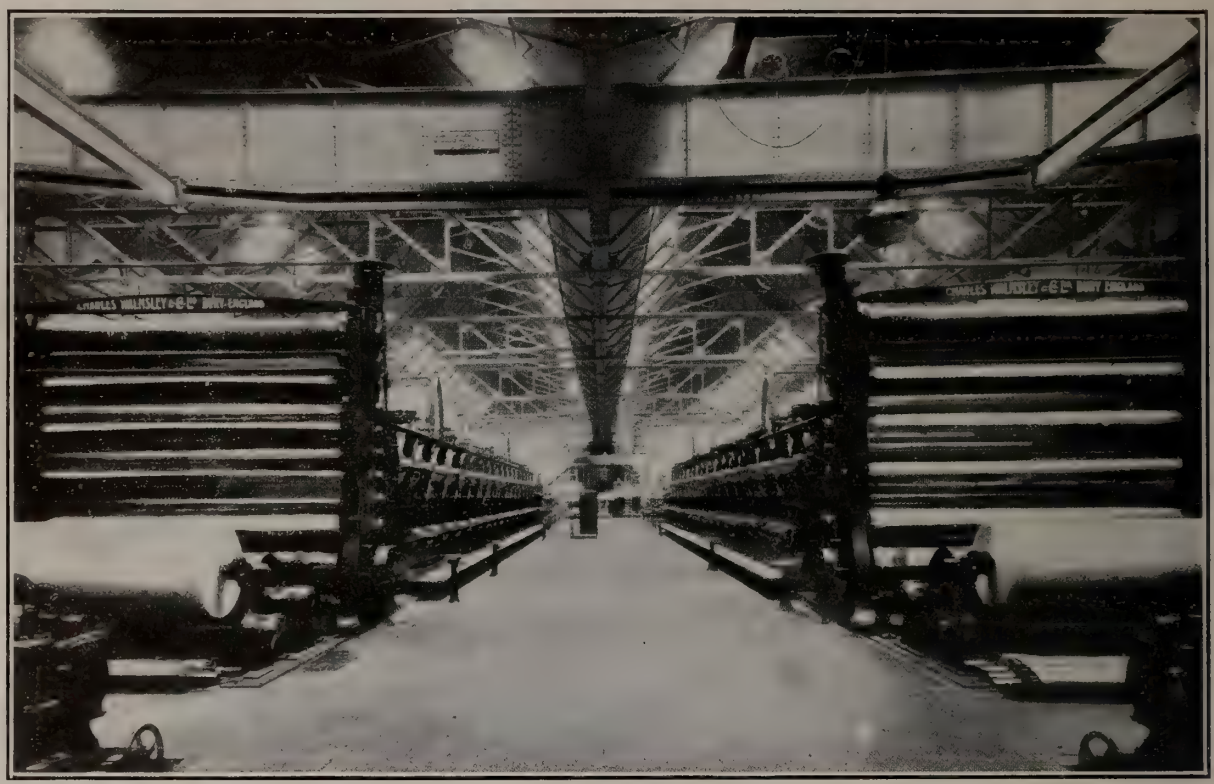
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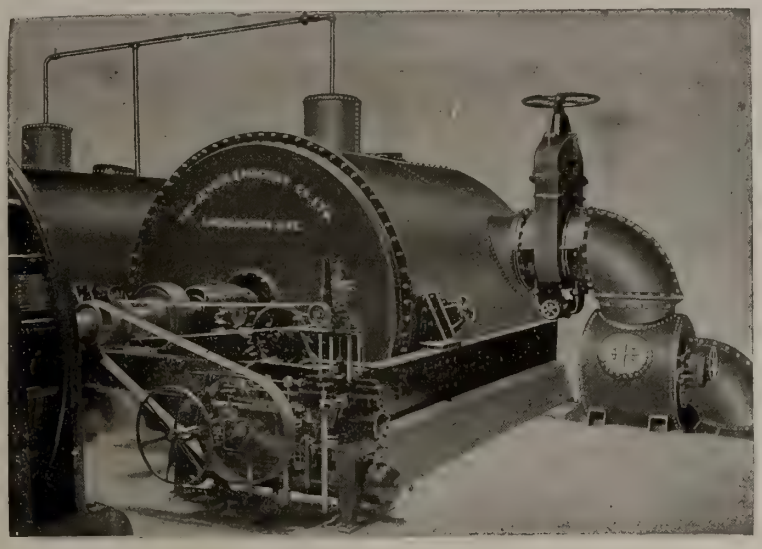
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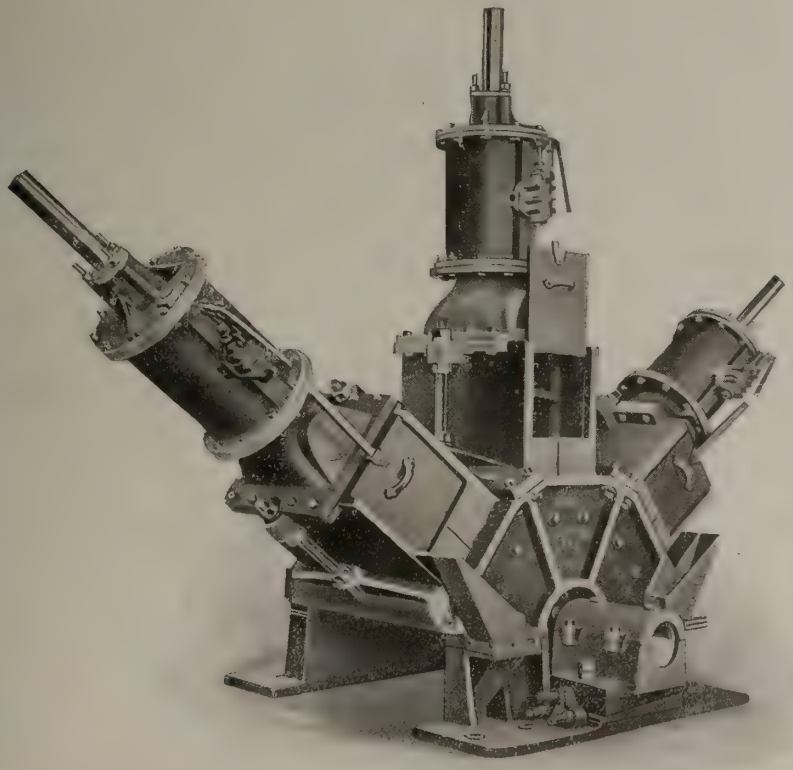
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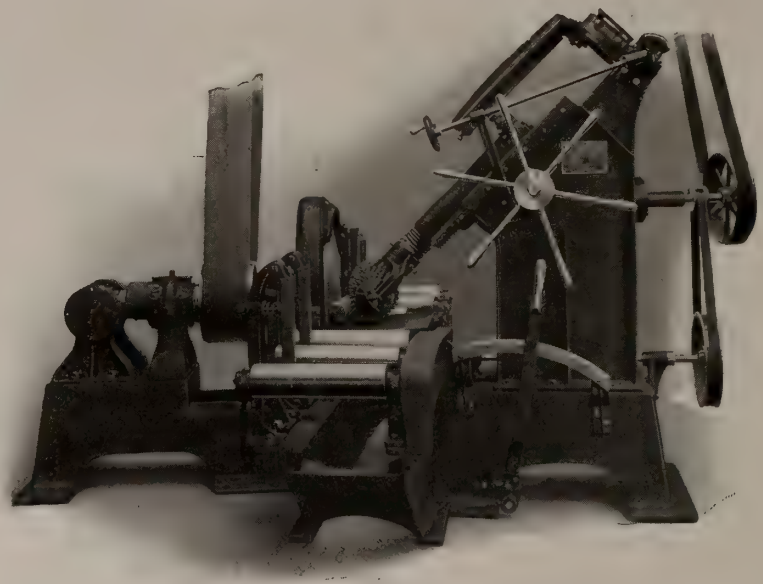
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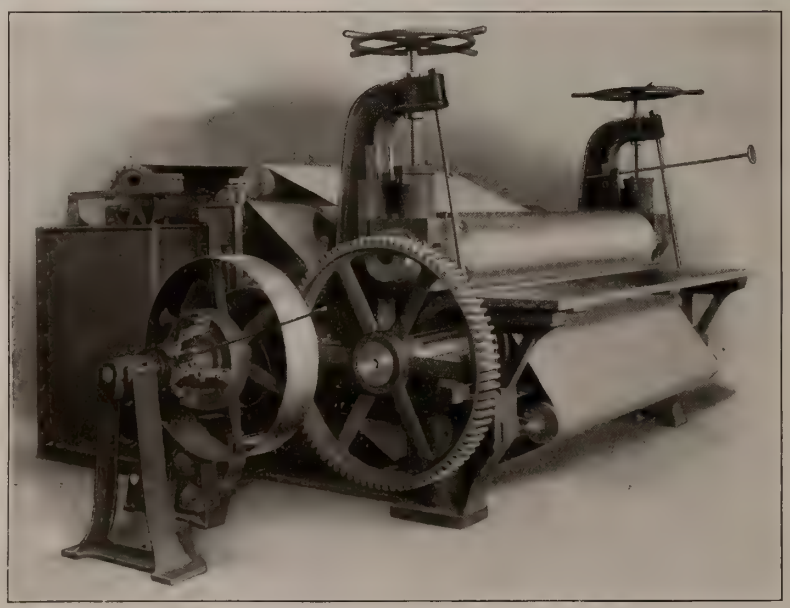
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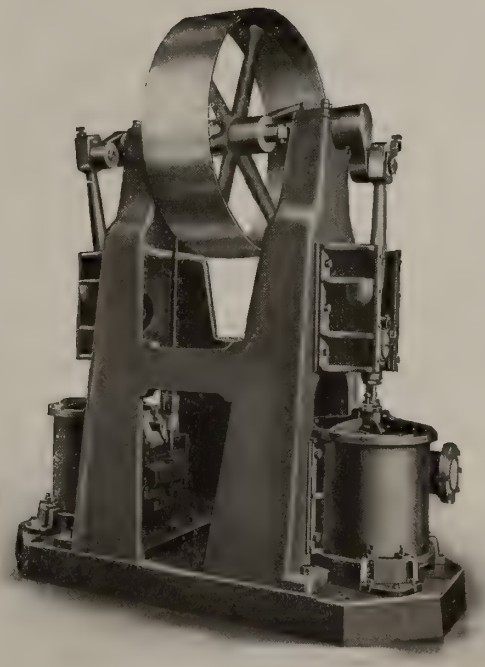
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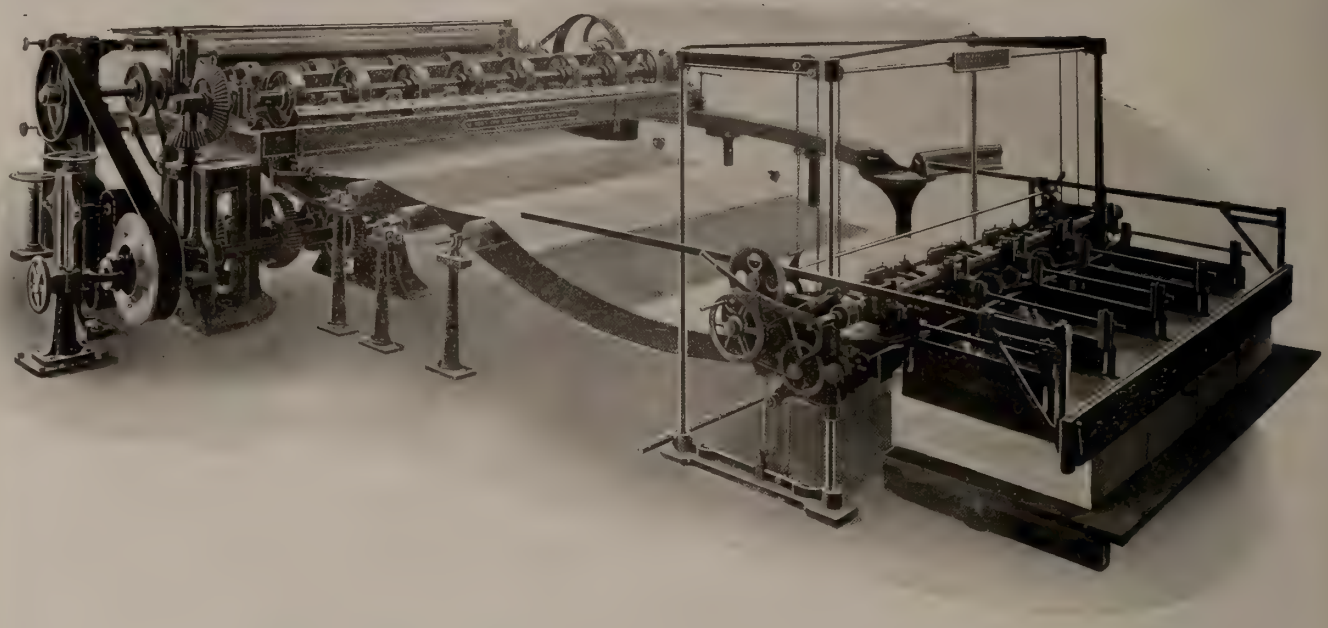
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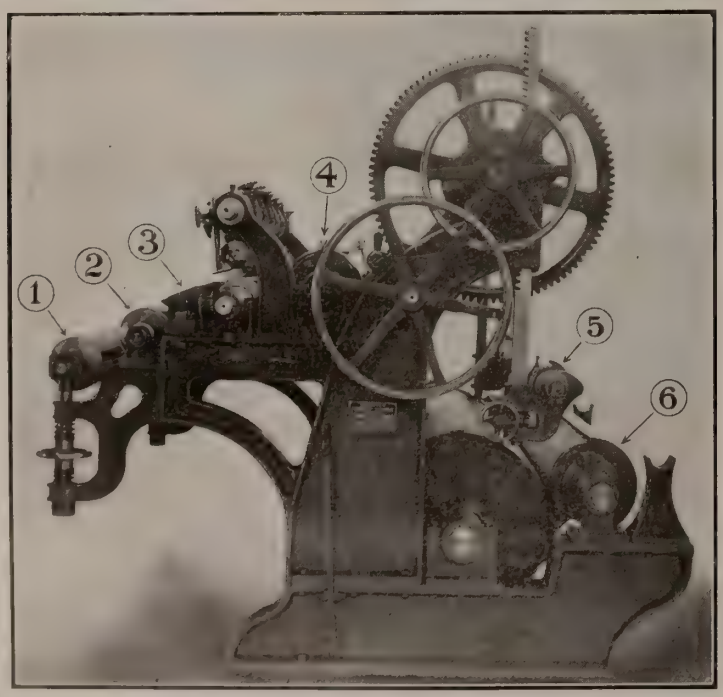


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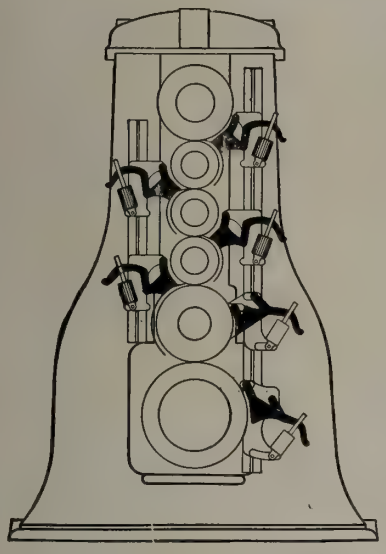
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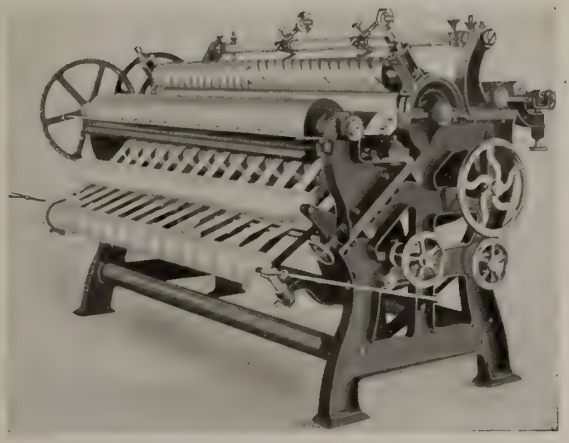
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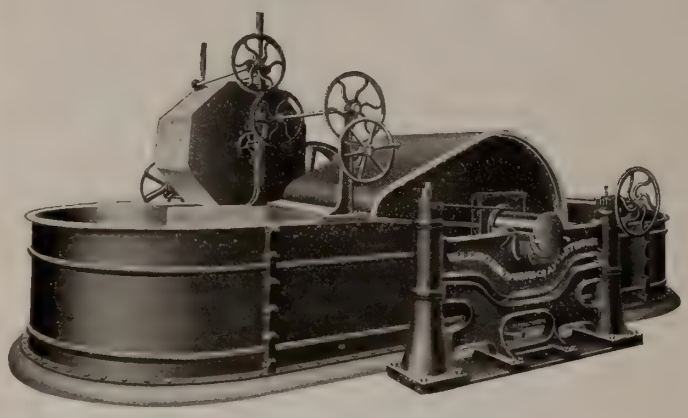
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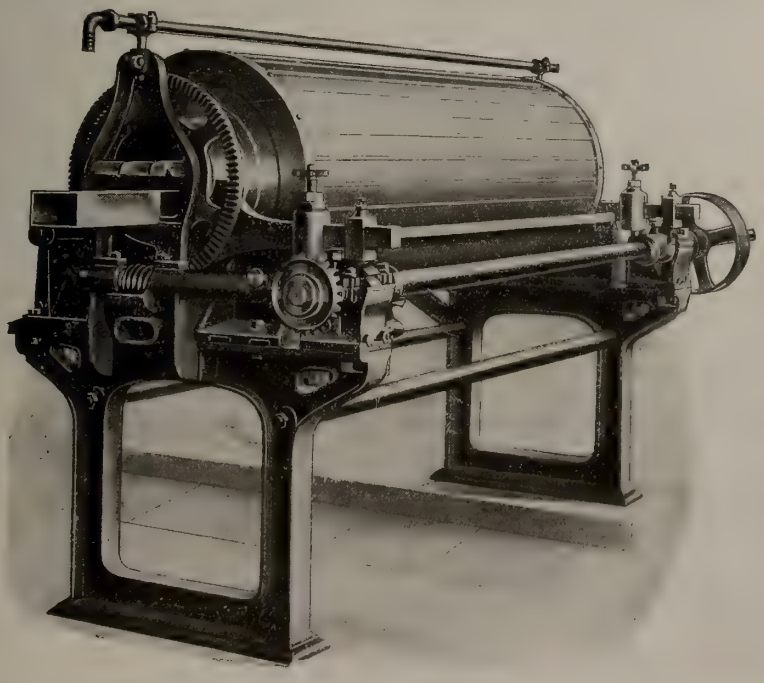
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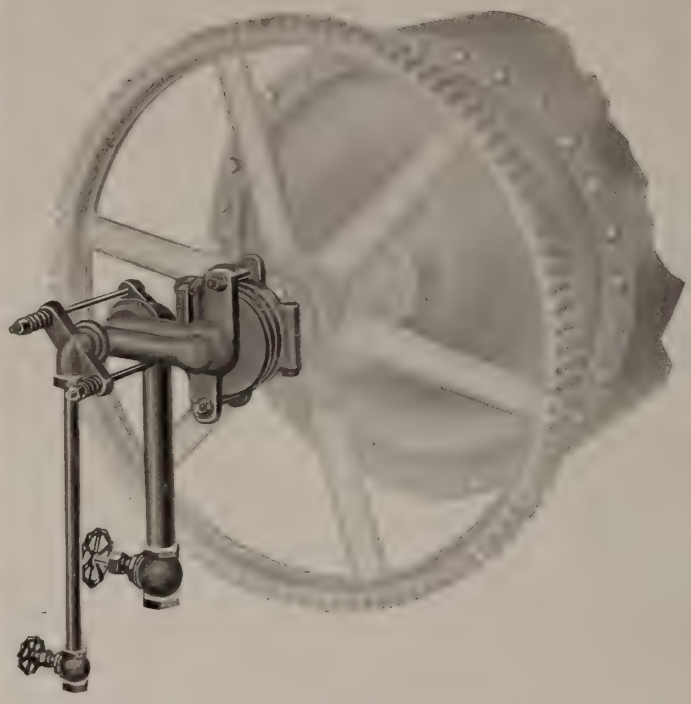
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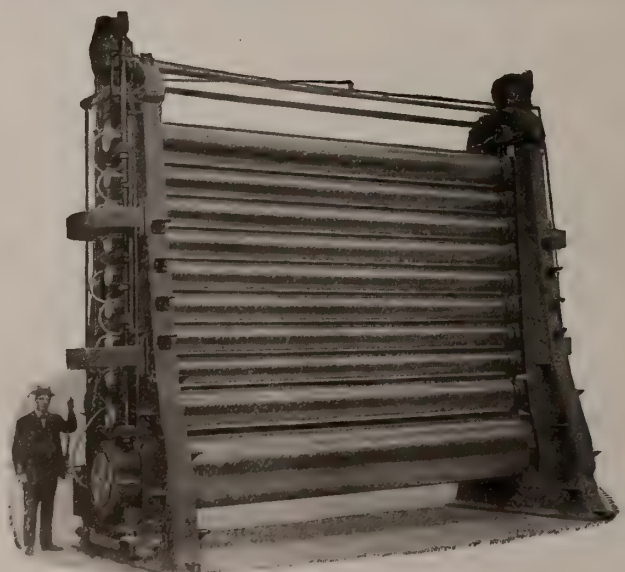
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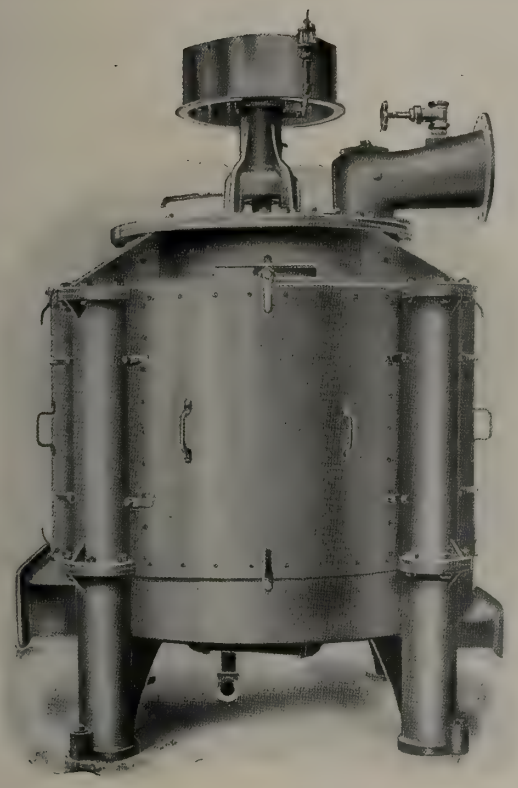
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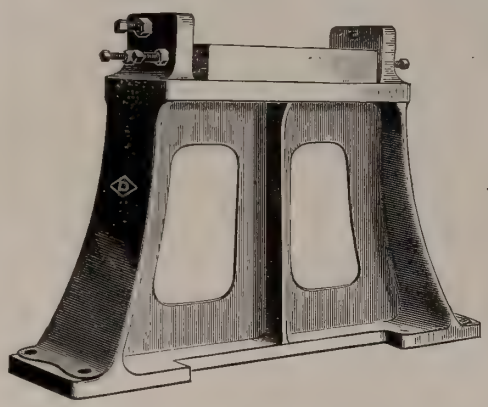
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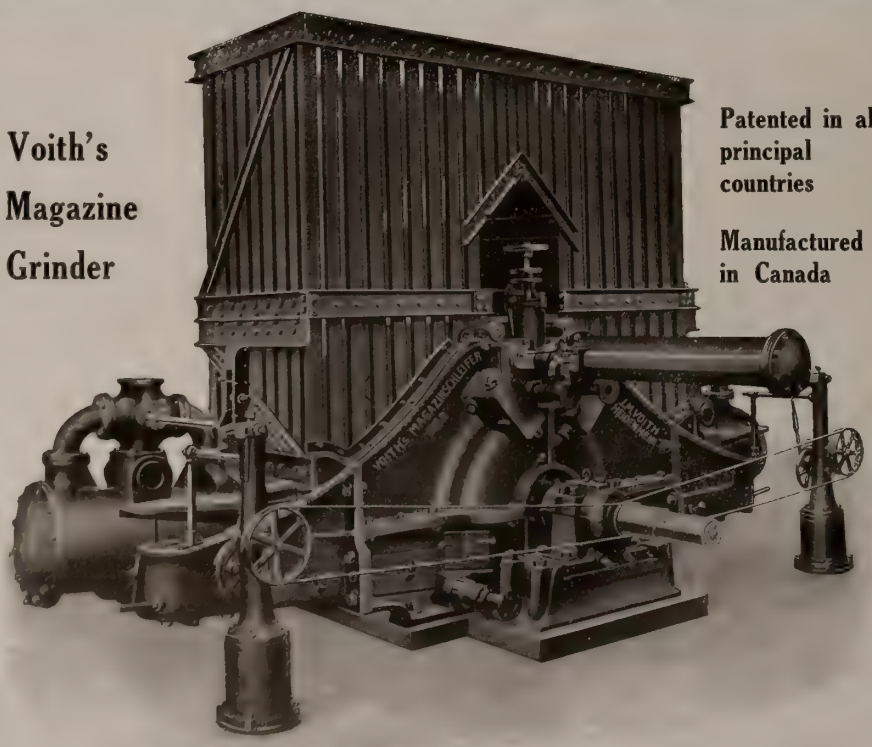
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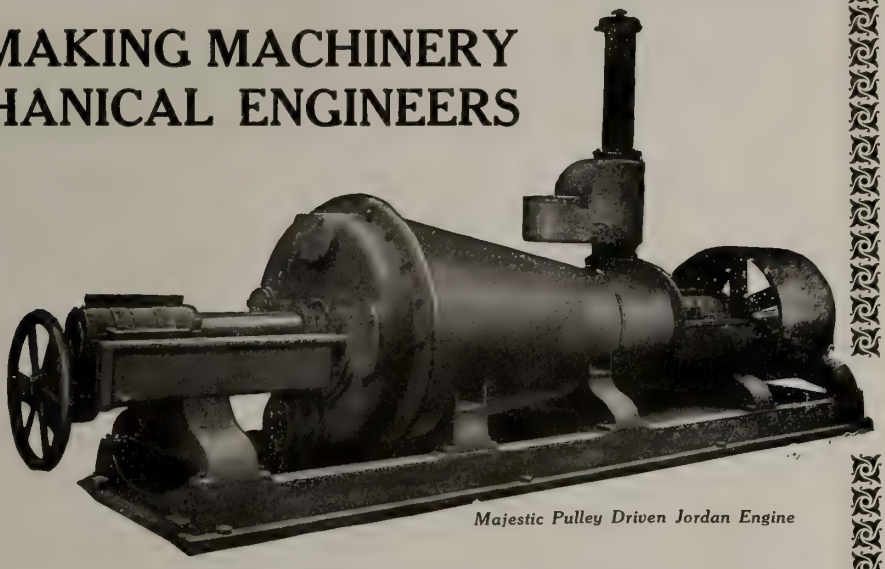
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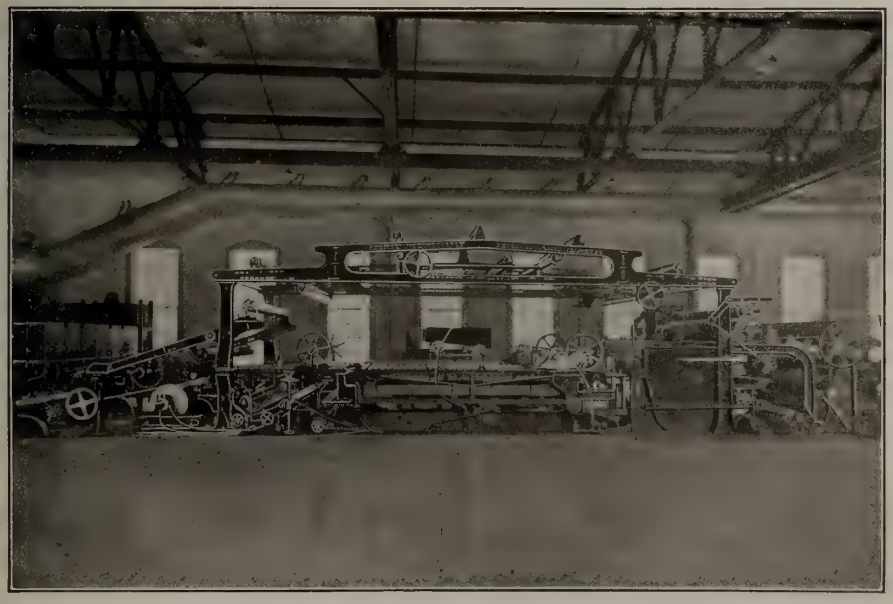
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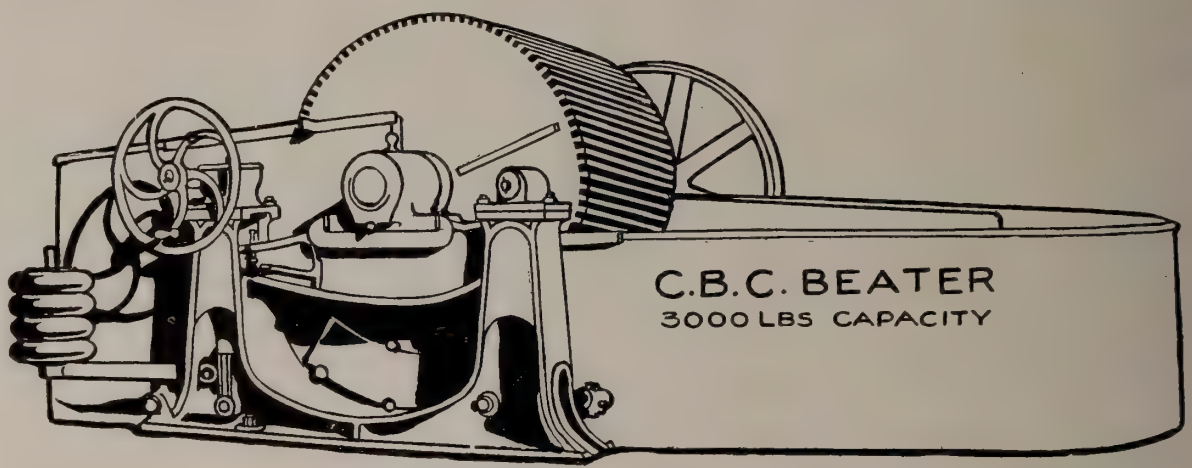
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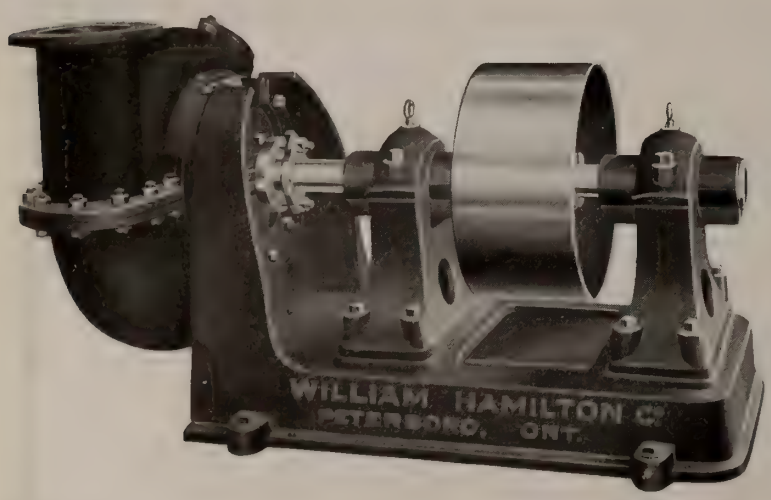
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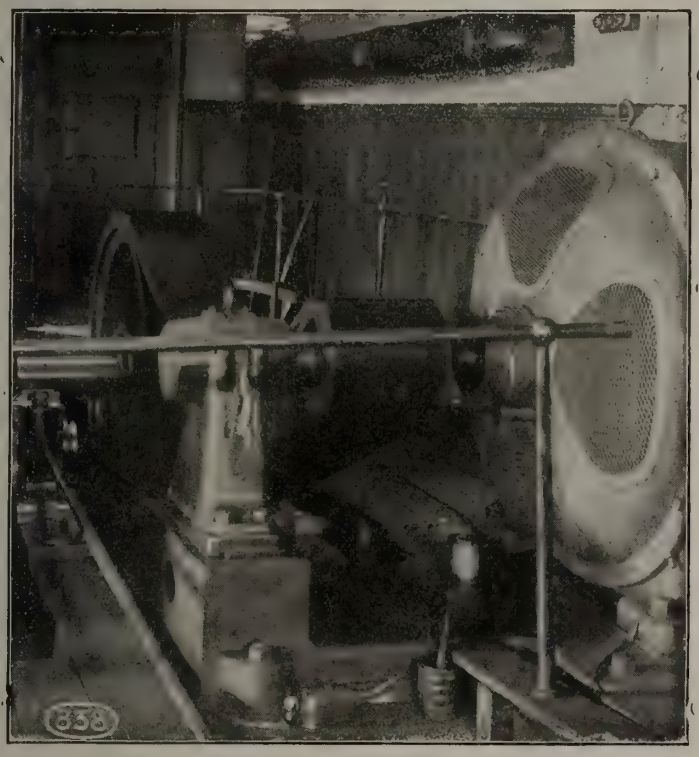
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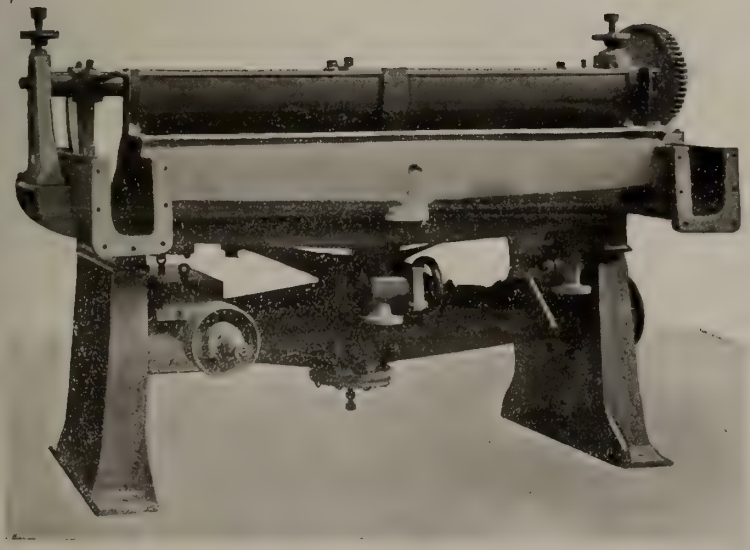
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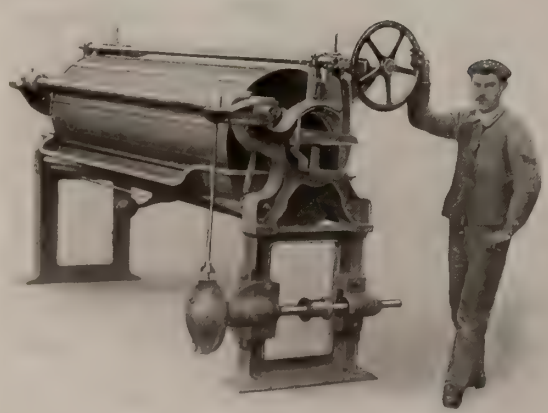
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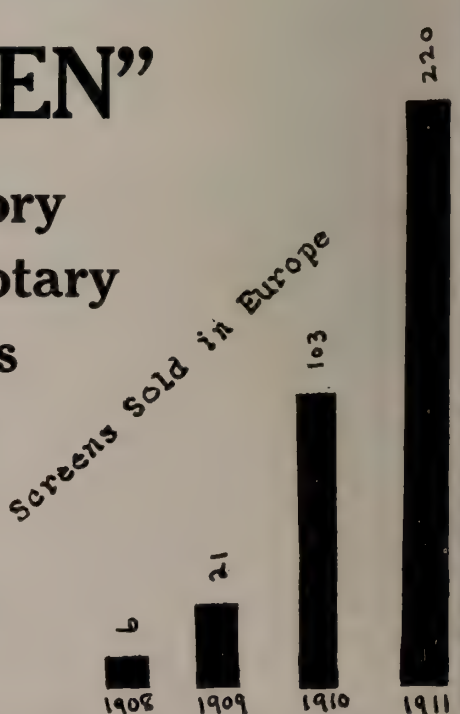


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VOL. XI. TORONTO, MAY 1, 1913 No. 9

NEW BRUNSWICK ROUGH ON PULP AND PAPER INTERESTS

The recent license law which has passed the Legislature of the Province of New Brunswick and of which we gave a full account in our last issue, is but half of the policy of that Government, the remainder not being, as yet, announced. As quoted in our columns, the plea of the small lumberman has had the most weight with that body of wise legislators. The Government of New Brunswick are to be congratulated on their stupidity in refusing to see the best interests of the Province and the lines of development which may be opened up for the inhabitants, who are among the most thrifty in Canada. Instead of abandoning their policy, as was hoped when this agitation and legislation was introduced, they have hardly modernized themselves in one particular. It is, on the face of it, a Government existing for the sole purpose of keeping itself in power by catering to the interests which supply the largest number of votes. Because the small lumberman represented a larger number of names on the voters' list than the fewer large operators, that Government has chosen to listen to their cry and give them exactly what they needed to continue their policy of squandering the Province's timber resources. The large operators who, in most cases, have adopted some policy at least of conservation or fair and reasonable cutting, have been penalized. A man with large limits who has been careful of fire and has cut judiciously is now faced by the proposition of paying for what he has done for the Province by additional stumpage and taxation. Slashing and destroying has been encouraged by encouraging the small operator, who has little at stake and is picking up corners and limits wherever possible, to be exploited as quickly as possible by a small mill, usually a rotary portable, which turns out poor lumber and destroys the forest. The legislature no doubt feels that it has offered a sop to those larger interests in the form of a thirty year license, renewable for two further periods of ten years each. On this slim foundation they expect sane business men to finance pulp and paper mills, investing millions of capital spending years to build up an organization, which, when nicely completed and on an earning basis, may be suddenly shattered by having their limits put up to auction and bid away from them by exploiters with smaller interests, who will squander the Province's resources and line their own pockets at the same time, voting with the Government which opened the Province's purse to them. One of the largest propositions has already served notice on the Government that they cannot consider developing a paper mill under those terms while they already had practically all of their capital of $7,000,000 in sight. The thing is now at a standstill, with more loss to the Province than if all the buccaneers who are exploiting her timber resources had been driven to the wall. The Province of New Brunswick was fortunate in having three very large propositions on foot which were not wholly dependent on the money market to float their schemes, but they have, in the face of all this, chosen to barter the birthright of the Province for votes and for the greed of power. If the legislators, in their narrowed lives, could but visit adjacent districts in Canada or the United States, doubtless, even in their blindness, they might have realized that in the end greater gains would accrue to the Province, and even to themselves, by adopting a broader policy ,to some extent comparable

with the policies adopted by all of the other Governments controlling pulp and paper resources. We would commend the legislature of New Brunswick to authorize an excursion, at the expense of the Province, out into the real world, to have the scales removed from their eyes.

MR. DODGE BLUFFS

The president of the International Paper Company, since the announcement of the new tariff of the United States, has given out frequent and lengthy interviews regarding the pending disaster which he predicts is coming to the print industry of the United States. This is entirely in the interests of his own firm, with the intention, doubtless, of influencing the passage of the bill through Congress. There is no doubt that a few of the smaller and more inefficient of the International's seventeen mills will be touched; indeed, already they have cut down their production of news some 400 tons daily, going onto lower grades, due in part to the invasion of the American market by Canadian print. A howl, in such a case, however, is wholly unjustified ,since that represents exactly the objection to the high American tariffs which have prevailed. They have encouraged inefficiency, over-capitalization, stock watering, and many of the more glaring ills, from which the industrial life of the United States suffers. Because an old mill is shut up with fair competition is no reason why tariff should be boosted to protect those who, from lack of foresight or stubborness have refused to improve their manufacturing conditions and adopt the newer methods. Many of the mills of the International were taken over in a sadly dilapidated state and have only been improved sufficiently to operate on a fair basis. No one will, in the face of this, argue that the hitting of such is to be deprecated. The American industry, on the whole, itself will benefit from being forced to improve many such plants, which will, on the whole, be very much better in the end. That labor is going to suffer and that the United States will see hosts of unemployed in the next few months, due to this cause, is an absurdity. Mr. Dodge is simply making capital and trying to encourage the union to join him in opposing the new tariff now before Congress. He further states that the Canadian Government is offering many lucrative inducements to American paper companies which, as Mr. Jackson Booth points out in our last issue, is entirely erroneous. The Governments of this country do not have to offer such inducements to bring development within our borders. Our raw material, and all our other manufacturing conditions, which are uniquely suitable for paper manufacture, have proven a sufficient attraction in the past and we doubt not, from the present signs, that it will continue even more so in the future. One American contemporary, in their current issue, also becomes frenzied over the fact that Canada is allowed to ship paper into their markets, while restricting the exportation of wood. The whole tone of the American manufacturers as shown from this and other sources, is that Canada has been specially placed, by the hand of Providence, in close proximity to their mills for their own especial benefit, and that anything which prevents their profiting by our resources is a crime on their much cherished hopes. We must congratulate ourselves that our Governments, Dominion and Local, all have a fair realization of the fact that our own resources should be developed within our own country and add to the healthy industrial conditions of our growing Dominion.

THAT CHEMICAL PULP CLAUSE

(Special to the Pulp and Paper Magazine.)

Montreal, April 29, 1913.

The United States tariff changes still provide subject for discussion among pulp and paper men. One of the most prominent and best informed paper manufacturers in the Dominion in discussing this question, brought to light some interesting facts regarding the United States sources of supply.

"The United States has removed $1,500,000 in annual duties on chemical pulp entering that country from Europe. This is based on the importations into the United States for the eight months ending with March. The United States importations of chemical pulp from Europe have increased 250,000 tons in the past six years or a yearly increase of between 40,000 and 50,000 tons. This 250,000 tons of chemical pulp means the consumption of 600,000 cords of wood. As wood in Europe is becoming scarce, the Americans are adopting a short-sighted policy in securing practically all their chemical pulp from Europe. In another half-dozen years, the United States will consume probably 250,000 tons more than she is consuming at the present time, and owing to the scarcity of wood in Europe, she will not be able to obtain her chemical pulp there. It would be far more to her advantage were she to encourage the manufacture of chemical pulp in Canada. Instead of that, however, they penalize us. We send them but about 6½ per cent. of their total importations of chemical pulp, and yet they put duties on our small exportation of chemical pulp, in order to make us remove the present restrictions dealing with wood cut from Crown Lands. In contrast with the $1.500,000 duties remitted to American exporters of chemical pulp, Canada gets a paltry $85.000 per annum remitted her, but on the other hand the new tariff schedule penalizes Canada to the extent of $165,000; in other words, they remove one dollar in duties and add on two dollars in another way. Europe is given about seventeen dollars preference to our one. The American people should remember that Canada buys over $6.000.000 worth of paper and paper manufactures from the United States every year. Altogether we buy from them approximately $1,000,000 worth of goods every day in the year, being their second best customer. The Americans are allowing paper in free if it is 2½c or under, and are allowing groundwood in free, but it seems like petty politics to put restrictions on chemical pulp. I feel satisfied that when the Americans thoroughly study the situation, that there will be some amendments to the proposed treaty. Certainly it would be to their advantage to have chemical pulp mills established in Canada alongside their own country instead of depending upon the more or less uncertain markets of Europe."—R.

PULP AND PAPER UNDER THE MICROSCOPE

By SINDALL AND BACON

(Special Series of Contributions to Pulp and Paper Magazine)

CHAPTER II

Fibre Structure. The introduction of new woods for papermaking consequent on the increased cost of the timber which has hitherto been almost exclusively used

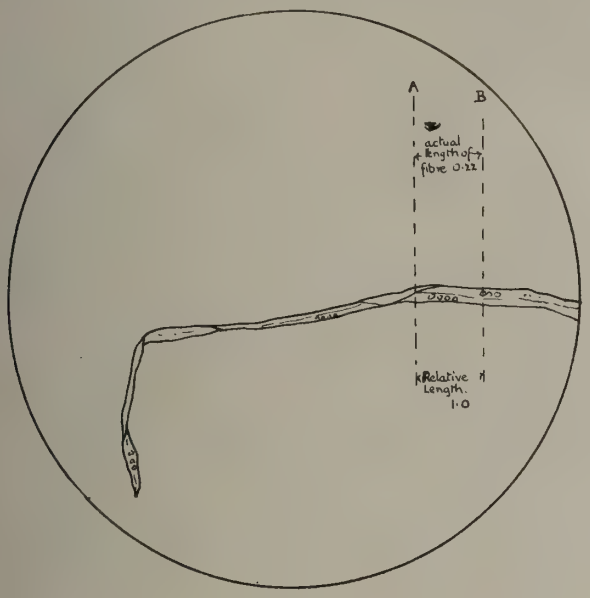


Fig. 1

calls for attention. This recent and inevitable departure in the development of the wood pulp industry must of necessity bring into existence a larger range of pulps

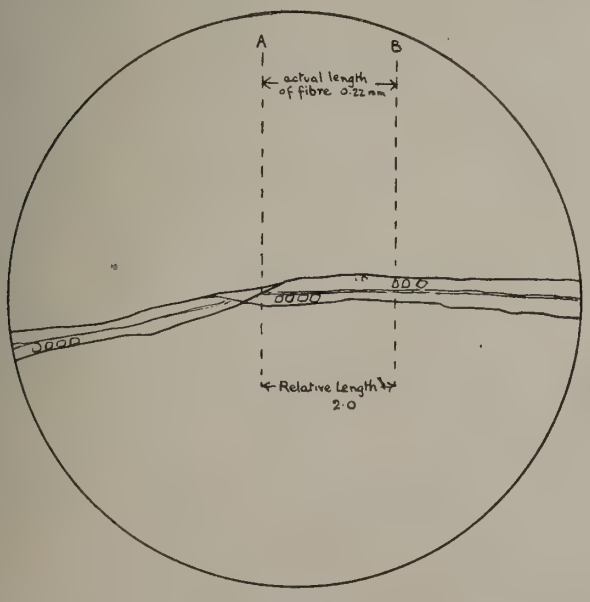


Fig. 2.

of varying quality, and compel the papermaker to deal with the matter on a scientific basis.

The desirability of being able to identify the particular wood of which a pulp may be composed, or of identifying the two or more woods which may be present in a mixture must appeal to every progressive manufacturer. The close relation between the fibre structure of a wood and the papermaking qualities of the pulp obtained from it should be made a subject of systematic study by the chemist who is in a position to keep proper records.

It follows that such records can only be made when detailed drawings have been prepared for the various woods which have been converted into pulp either experimentally or on a practical scale. The fibres of wood pulp show characteristic markings when examined under the microscope, by means of which the original wood may be identified, and a set of drawings prepared from known specimens renders the task of identification less difficult and uncertain.

Making Drawings. It is for this reason we dwell at some length on the question of magnification and the

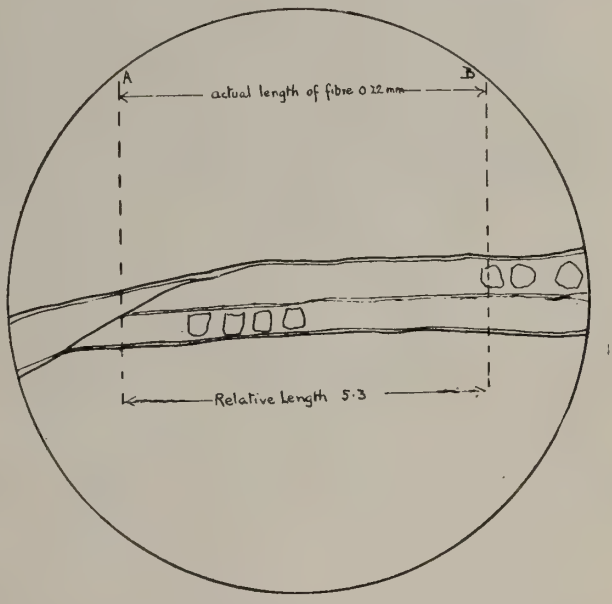


Fig.3.

method of making a drawing of the fibre. It may be noted that a drawing is more useful than a photograph, because it is possible to confine it to the characteristic points and omit unnecessary detail.

The illustrations given have been taken from a single fibre of spruce wood pulp. This was suitably mounted in the zinc chloride iodine solution, faintly stained, and tracings made with a Beale tint reflector.

We propose to give details of the method in a later chapter, with sketches of the apparatus

Fig (1) shows the fibre under a magnification of about 40 diameters nearly the whole length being visible. The actual portion of this fibre selected for observation and comparison was a section measuring 0.22 mm., and this was drawn under the several magnifications described. The exact effect of the magnifica-

tions is shown by taking the length under the lowest power as being the unit 1.0.

Fig. (2) shows the amount of fibre in the field of view when the relative magnification is 2.0. The section of fibre is enlarged and the details of structure become more pronounced.

Fig. (3) The fibre is now enlarged to 5.3 times the size shown in Fig. 1, and the section measuring 0.22 mm. occupies nearly the whole field.

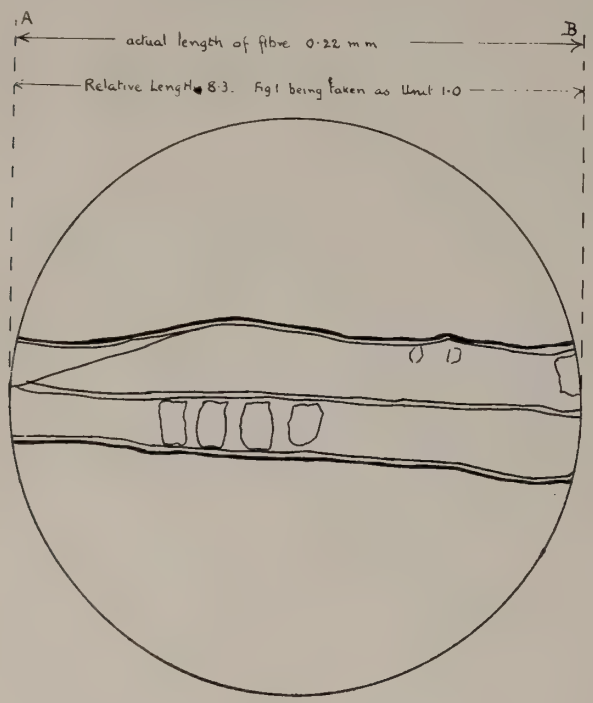


Fig. 4.

Fig (4). The magnification is now 8.3 times that of Fig. 1 and represents the fibre enlarged to about 330 diameters.

(To be continued).

CARTER-CRUME CO.S EARNINGS IN 1912 SHOW INCREASE.

The thirteenth annual meeting of the Carter-Crume Company, Limited, was held in Toronto on April 14th, when the annual report was presented.

A good increase in profits is shown and the balance at the credit of profit and loss is increased by $45,176.

The report states: "As the shareholders were advised by circular under date of September 30th, 1912, the old American Sales Book Company and the Carter-Crume Company, Limited, agreed to forego dividends on 20,000 shares of the preference stock of American Sales Book Company, Limited, for a period of twelve months. This company's proportion of that amount was 11,976 shares, and the arrangement applies to the dividends for the quarters ending September 30th and December 31st, 1912, and March 31st and June 30th, 1913. It is not expected that this arrangement will have to continue beyond the latter quarter. The directors have in contemplation calling a special meeting of shareholders during the present year, in order that they may submit a plan for the exchange of the stock of this company for that of American Sales Book Company, Limited."

O. A. PORRITT.

(Special to the Pulp and Paper Magazine.)

Kenogami, Que., April 28.

As announced in our last issue Mr. Porritt has resigned.

Mr. Oswald A. Porritt has severed his connections with the management of the paper mills of Price Bros. & Co., Limited, Quebec. His many friends and business acquaintances will learn of this with surprise and regret. He states it was owing to differences of opinion between some of the directors and himself regard the management of the Kenogami Paper Mills.

In 1902 Mr. Porritt associated himself with Mr. William Price and formed the Price, Porritt Pulp & Paper Co., of Rimouski. In 1905 he removed to Jonquieres to take charge of the Jonquiere Pulp Co., which was losing heavily. Two years later it was making money, the entire machinery had been practically renewed, a paper machine with accessories installed, a sulphite plant and electric power station had been built, out of earnings, leaving sufficient to pay the regular dividend of the shareholders. In 1911 the shareholders received 12% and a large sum was added to the reserve account; while last year they received 18%.

In May, 1911, the first sod was turned on the site where now stands the Kenogami Paper Mills— one of the largest and best equipped newsprint plants in the world. Three Walmsley paper machines have been installed and two of them have been making paper for some months; the third machine has just been started up owing to there not being a sufficient supply of wood available. While still retaining an active interest in the working of the mills at Rimouski and Jonquieres, Mr. Porritt represented Price Brothers & Co. on the spot at Kenogami throughout the construction of this work. The responsibilities and worries incidental to such a large undertaking became burdensome; and the mill being on its feet Mr. Porritt went to Bermuda on a holiday. During this holiday, the directors took action in connection with the management of the mill which was altogether opposed to the policies Mr. Porritt had inaugurated, and for this reason, it is said, he gave in his resignation. As to his future plans, Mr. Porritt states, he has not decided definitely.

THE JOURNAL OF COMMERCE AND SHAREHOLDER.

The Commerce Publishing Co., Limited, have recently purchased and amalgamated two of Canada's oldest and most reliable weekly journals. The Journal of Commerce, established 1875, and the Shareholder, established 1878. The new weekly will be published in Montreal every Friday under the name of the Journal of Commerce and Shareholder. It will be devoted to the fields of commerce, finance, and insurance, giving special attention to Canadian industry.

In this connection the editors will have the assistance of the combined editorial forces of the Pulp and Paper Magazine, the Canadian Mining Journal, the Canadian Miller and Cerealist, and the Canadian Textile Journal, all of which are issued from the same offices.

QUEBEC FORESTRY

By ELWOOD WILSON

In any business the most important thing to know is the amount and the cost of raw material. One of the most important industries in the Province of Quebec is that of the manufacture of pulp and paper, and the raw material is wood of spruce and fir, found in her forests, and it is of vital importance not only to the the industry itself, but to the province to know how much we have in stock, and how much we can depend on for the future.

Now there are two ways of looking at a forest, one is as a wood mine, and the other is as a wood farm. If we regard a forest as a mine we can only depend on it for the amount of wood which actually exists at present, and, when we have cut off and used up that wood, industries dependent on it must find some other raw material or get out of business. If we regard it as a farm, we must know how long it takes to produce a crop, how much that crop will yield, and what it will cost to produce. In any case the first thing to find out is how much land we have in forest, and how much of that is available, for a forest is like a mine also in this, that if it is located, so that there there are no economical means of transportation it is valueless. A rich gold mine is of no value if it is physically impossible to transport the gold to civilization or if the cost of transportation exceeds the amount of money which can be obtained for it at the nearest market. So with a forest, if there are no rivers to float the logs, or no railways to haul them, or if the floatage, or railroad charges eat up the profits, it is of no value, so that even if we have hundreds of square miles of timber which can only be driven to James Bay, such timber is of little, if any, economic value, and for the present at least can be left out of consideration. Therefore, we need speak now only of the wooded areas which lie within reasonable hauling distance of the rivers which empty into the St. Lawrence. In dealing with this question the writer is only competent to judge of the area lying north of this great river, and will leave the "south shore" out of the discussion. The total area of the Province of Quebec, without Ungava, does not exceeed 346,000 square miles, of which 303,855 lies to the north of the St. Lawrence. This has been divided by Dr. Fernow, in his most excellent article on "Forest Resources and Problems of Canada" in Vol. VII., No. 2, of the Proceedings of the Society of American Foresters into four main types of forest, the "Northern Subartic (without fir), which reaches from a line drawn practically due east from the southern end of James Bay, to the Atlantic and north to Ungava Bay; and which is of no commercial value. "Southern Subartic" (spruce and fir forest), which extends southward from the above-mentioned easterly line to practically the "height of land"; the "Laurentian type" (coniferous forest), extending from the "height of land" almost to the St. Lawrence, "Lower St. Lawrence Type," which comprises a narrow strip about 15 to 25 miles wide along the river from Quebec to Seven Islands. This may be tabulated as follows:—

	Square miles.
"Northern Subartic"	91,442
Southern Subartic	112,644
Laurentian	79,408
Lower St. Lawrence	2,511
Settled	17,830
Total	303,855

Of these types we can leave the Northern Subartic out of consideration as it lies beyond the limits of transportation, and is probably too sparse and too scattered to be of any commercial value. Of the Southern Subartic, Mr. G. C. Piche, head of the Forestry Department of Quebec, estimates that from the Saguenay River eastward, not over ten per cent. of the area is timbered, the forests being confined exclusively to the river valleys, flats and the hills being entirely bare. Of the remainder of the area in this type and of that in the Laurentian, about thirty-three per cent. may be said to be water, burnt and muskeg. Then, too, quite a large percentage has been lumbered in the Ottawa, St. Lawrence, St. Maurice and Saguenay valleys, but we will treat this as being fully stocked.

The easiest way to discuss this country is by dividing it up into watersheds, and speaking of them separately. That of the Ottawa River is probably the best timbered, and has the largest trees, and with the whole timbered area available for lumbering. The watershed of the St. Lawrence between the Ottawa and the St. Maurice, is practically the same as that of the Ottawa. In the St. Maurice Valley the timber begins to be a little smaller, and toward the east there is less balsam than

Location	Forest Type	Total Area	% Timbered	Sq. Mi. Timber	@ cds. Per acre	Total Cords
James Bay Watershed..	Southern Subartic	11 233	60	6740	3	12 940 800
James Bay Watershed..	Laurentian	1 824	60	1094	4	2 800 640
Ottawa Assumption, St. Maurice and Saguenay Rivers	Laurentian	63 852	67	42780	8	219 033 600
Lake St. John, Northern Tributaries	Southern Subartic	17 027	59	8513	4	21 793 280
Northern Shore of the St. Lawrence	Southern Subartic	38 612	20	7722	3	14 826 240
Northern Shore of the St. Lawrence	Laurentian	12 188	40	4875	4	12 480 000
Northern Shore of the St. Lawrence	Lower St. Lawrence	2 511	50	1255	5	4 016 000
		147 247		72979		287 890 000

in the Ottawa Valley. In the section draining into the Lake St. John, and its outlet, the Saugenay, the burnt areas are larger; the percentage of spruce increases, and the trees begin to decrease in size, and this diminution continues gradually as one descends the St. Lawrence, and timber is only found in the valleys. On the watersheds of the rivers which drain into James' Bay the only available timber for many years to come will be that which lies within, say, fifty miles of the Transcontinental Railway. The table below shows the different watersheds and their areas, as taken from the latest maps, the percentages of these areas which are in merchantable timber, the number of cords per acre and the total standing timber in the province. I am aware that this estimate is the lowest which has yet been published, but the figures have been carefully compiled, and are based on the only accurate surveys and estimates, which have been finished to the the time of writing.

In speaking of what can be expected in the way of annual growth, it must be borne in mind that in our virgin stands there is very little increase in the volume of timber per acre, as the mature young growth can only develop as mature trees die and fall or are thrown down by the wind, letting in the light, which is necessary for its growth.

FORESTRY PROGRESS IN BRITISH COLUMBIA

The forests of British Columbia contain approximately one-half the standing timber of Canada. The utilization of this vast body of forest wealth is yet in its very infancy. The annual growth of the forests of the Province is even now, before they are either adequately protected from fire or from waste, certainly not less than five times the present annual lumber cut.

The declared policy of the newly-established Forest Branch, Department of Lands, is the development of a greater lumber industry for British Columbila, along lines which will provide for the prompt utilization of mature timber, and for safeguarding the forest against unnecessary waste, in such a way as to ensure a good second crop upon logged-off lands.

During the fiscal year 1912 the forest revenue was $2.753,579. One-tenth of this amount was expended for forest administration and protection, aside from the direct contribution for fire protection made by lessees and licensees. Thus, while one dollar in every four of Provincial revenue was derived from the forests, but one in every fifty expended was devoted to the forests. The plans of the Forest Branch for the coming year contemplate a material strengthening of the fire-protective organization. Although the forest fire loss during 1912 was the smallest in the history of the Province the loss was nevertheless large in the aggregate, and a determined effort will be made in the form of larger appropriations and better organization, to the end that such loss may be reduced to the lowest possible figure in the future. The Provincial Government is thus acting on the thoroughly-established principle that the permanence of forest revenues depends upon a reasonable expenditure for protection and development. —R. L. C.

MONTREAL NOTES

(Special to the Pulp and Paper Magazine.)

Montreal, April 29, 1913.

The study of all matters relating to forestry has taken a firm hold at Laval University in Quebec. This year all the students taking this course are to receive practical training during the summer months. In addition, it was announced a few days ago that for the next session the Government will build a separate building specially devoted to the needs of the Forestry Department. The present accommodations in Laval are found to be entirely inadequate for the increased attendance. During the summer months the forestry students at Laval will be divided into squads and sent out to various parts of the country to engage in practical work. One contingent of eighteen students are leaving this week to engage in practical engineering and topographical work in the Townships of Rawdon and Chertzy. At the conclusion of their work in these townships, they will go to LaChute and engage in the reforestration of the quicksands in that vicinity. They will be accompanied during the summer by members of the staff. Another party are going to Northern Quebec, where they will make an inventory of timber reserves owned by the Quebec Seminary, and engage in practical road work, the construction of telegraph lines, outlook stations, etc. They will conclude their summer's work with a tour of all the principal pulp, paper and sawmills of the Province.

A third squad will go to British Columbia, where they will be employed by the Canadian Pacific Railway in making an inventory of the limits owned by that company. These students will work in conjunction with the students from the forestry schools of Fredericton and Toronto Universities. It is announced that all the students graduating from Laval this year have secured appointments, some of the men going with pulp and paper companies, others with lumbering concerns, and still others with the railroads. Some will also be employed by the various Provincial and Federal Governments. There seems to be a great demand for forest engineers, owing to an awakened interest in the matter of conservation and to the increased value of our forests.

The Wayagamack Pulp & Paper Company, of Three Rivers, announced that they have sold an additional $500,000 of first mortgage 6 per cent. bonds for the purpose of installing a plant for the manufacture of a fine grade of paper. This sale of bonds will bring their total outstanding bond issue up to $3,500,000. The company is now turning out Kraft paper at the rate of 50 tons per day, and with the increased plant from the sale of their bonds, will do even better than this.

C. Meredith & Company, Limited, are offering for sale a small unsold balance of the Rolland Paper Company's first mortgage bonds. These bonds, which bear 6 per cent. are being offered at par. The money thus secured will be used for the extension of the Rolland Paper Company's business.

The Abitibi Pulp & Paper Company, who have one million acres in Northern Ontario, will also shortly be making a public issue of stock. The company has an authorized capital of $1,500,000 preferred, of which $1,000,000 will be issued and $3,500,000 of common stock, of which $3,000,000 will be issued. There is also a bond issue of $1,500,000 of which $1,000,000 will be issued. —R.

HYDRATION IN PAPER MAKING PROCESSES

By CLAYTON BEADLE and HENRY P. STEVENS

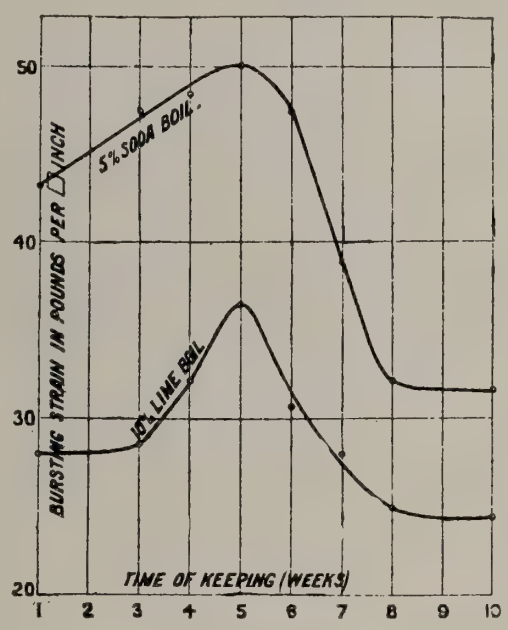
It is generally recognized that beaten stuff undergoes changes as the result of keeping which influence the character of the paper, and that these changes, as far as they take place under ordinary industrial circumstances, are mostly of a beneficial nature. Generally very little time intervenes between the completion of the beating operation and the conversion of the beaten pulp into paper, usually a few hours. During this short period it is not possible to observe any change but when the beaten stuff remains in the beating engine and stuff-chests over the week-end, a marked change is frequently noticed, not only in the beaten stuff but in raw materials in all stages of preparation, provided that they are in contact with the water. If rags after boiling are allowed to drain, they become in time heated and rotted, developing a waxlike substance and showing an etheral extract of 3 per cent. The rags become softer and more easily beaten and the character of the paper is considerably modified. If the boiling is done with lime, the heaping up heats and "tenders" the material. This process is employed in the manufacture of blotting paper. With rag half-stuffs, cotton and linens of all descriptions, if the stuff is allowed to remain for some time immersed in water, it becomes when beaten, more wet or hydrated and within certain time limits produces a better felted and stronger and closer paper. Save-all stuff containing starch, size, and other materials liable to putrefaction, rag half-stuff from presspate, moist bleached straw pulp, moist mechanical wool pulp, and even strong fibres such as Manilas in their green state, deteriorate owing to mould growths and similar agencies.

The harmful effect of wet storage is particularly noticeable in materials associated with impurities, as in the case of unboiled rags which if moist will sometimes, even in the space of a few weeks, heat up, decompose, and be converted into soluble products to the extent of 50 per cent.

We recently had occasion to examine a case of a consignment of cotton material containing about 6 per cent. of oil and 5 per cent. of protein which came in contact with water. In the space of a few weeks the whole of the material had become decomposed, friable, and in places was jet black. In this case there was complete absence of mould growth, and the rapid decomposition of the cellulose must therefore be attributed either to chemical or bacterial action.

As will therefore be understood, the presence of moisture during storage or "ageing" is either beneficial or harmful, according to circumstances. It is often beneficial in the case of wood pulp—thus, moist mechanical pulp is a far more useful article than dry mechanical pulp, and the fact that English papermakers do not grind their own mechanical, or cook their own chemical, wood pulp, places them at a great disadvantage in comparison with many of their foreign competitiors.

In order to ascertain the influence of "ageing" of beaten stuff upon the bursting strain of paper produced, we chose a fibre which is typical of the Manila class—the Hedychium coronarium. This was boiled with 5 per cent. of soda for 5 hours at 40 lb. pressure and beaten in a hollander. Another lot was similarly prepared. but by boiling with 10 per cent. of lime in lieu of soda. paper was made from each immediately after the beating and then at differing intervals. In each case the paper was made under similar circumstances as to consistency of stuff, substance of paper, and so forth, the only variable being the time elapsed after beating. The substance was 20 lb. demy (equal to 74 grams per sq. meter) and the thickness was 0.10 mm. The bursting strain is given in the diagram. In the case of the soda boil a steady increase in bursting strain is shown up to 5 weeks and then a rapid decrease to 8 weeks, and from 8 weeks to 10 weeks very little change. In the case of the lime boil, as might be expected, the bursting strain is in all cases less than with the soda boil. It shows also a maximum at the fifth week and a rapid diminution up to the eighth week, after which there is very little change. We noticed in both cases that, after the fourth week putrefaction set in. This increased rapidly



Hedychium—Illustrating the Effects of Wet Storage of the Pulp Upon the Bursting Strain of the Paper.

and more than counterbalanced the beneficial effect brought about by the gradual hydration due to prolonged contact with water, hence a maximum bursting strain is reached. It is our intention in a similar way to investigate the effects of wet storage upon the breaking strain and elasticity of paper.

Discussion.

Prof. Donnan asked whether the beaten stuff was kept with alkali or not. The great increase in the bursting point of the paper was thought by the author to be due to hydration. Might not the observed effects be dependent on changes in the physical state of the colloid? It would be interesting, for example, to ascertain the effect of various kations and anions on the rate of change of the properties mentioned.

Dr. J. Harger asked whether it would be possible for the weakening effect to be due to the destruction of the fibre by bacteria.

Mr. H. E. Potts asked whether soda had a more penetrating effect on the fibre than lime, and might not the difference be due to the difference in the surface tension induced by the lime or soda used.

Mr. Clayton Beadle replied that the alkali was washed out of the beaten stuff. After beating, the fibre was able to retain a far larger quantity of water than when unbeaten. Whether that was a chemical or physical phenomenon it was difficult to say. Eighteen years ago he had made some experiments on the rates at which desiccated cotton wool and other forms of cellulose took up water on exposure to the air. He believed that he was the first to observe that this absorption gave rise to an increase in temperature and that the two, namely the temperature rise and moisture absorption, bore some relation to one another (Beadle and Dahl, Chem. News, 73, April 17, 1896). Subsequently, without any knowledge of these observations, Professor Orme Masson measured the actual heat evolved per gram of water absorbed (Proc. Roy. Soc., 1904, 74, 230-254). Up to the time of the publication of Masson's researches he (Mr. Beadle) had been inclined to regard the rise of temperature as evidence of chemical changes, but Masson's conclusions were that the amount of heat was approximately that calculated for the quantity of vapour absorbed, and that the water condensed on the cotton did not combine chemically with it. That, however, still left the explanation of "wetting" by prolonged beating or "ageing" an open question. Some regarded it as real hydration, but others thought that it was purely mechanical.

The beaten Hedychium became more wet and slimy to the feel, absorbed water and became more gelatinous as the result of ageing, and simultaneously the bursting strain of the paper produced therefrom increased. As the material increased in wetness or hydration it became more susceptible to putrefactive changes, resulting in the destruction of just that portion of the material which had given increased strength, hence the undoing of the initial effects of ageing.

With regard to the use of soda or lime, the relative amounts required to be used in practice was not a that 10 per cent. of lime would bring about a somewhat matter of molecular ratios. In practice it was found similar result to 5 per cent. of caustic soda. In the case of soda, soluble salts were obtained, whilst with lime the salts were insoluble. Furthermore, the amount of lime in solution at any one time was small as compared with soda, and boiling with lime was a longer operation in consequence. The hydration effect was greater in the case of soda, as would be observed on comparing the two curves.—Paper read before Society of Chemical Industry, Liverpool, and published in Pulp and Paper Magazine with author's compliments.

THE ST. LAWRENCE PULP AND LUMBER CORPORATION BONDS—WHAT A PROSPECTUS SAYS ABOUT THE COMPANY.

The bonds of the St. Lawrence Pulp and Lumber Co., of Gaspe, Quebec, are now being offered to the public for subscription. The issue, which consists of $3,000,000 first mortgage sinking fund gold bonds, are being placed at par, and a yield of 6 per cent. is said to be likely.

The undertaking bears much promise of success, being in the hands of several men identified with the paper manufacturing industry for some time. These include R. F. Whitmer, who is president of the company and acts in a similar capacity with the Parsons Pulp and Lumber Company of West Virginia, the Champion Lumber Company of North Carolina, and William Whitmer & Sons, Incorporated, of Philadelphia. William H. Sharp, who is vice-president of the company, is president of the Jessup & Moore Paper Company, of Philadelphia, and the Kenmore Pulp and Paper Company.

The St. Lawrence Pulp and Paper Company was organized under the laws of New York State and has a capital stock of $4,000,000. It is stated in a prospectus that it "took over the timber rights (held under grant from the Crown) of a tract of over 630 square miles, together with about 3,000 acres of land owned in fee simple, lumber mill, rossing mill, yard, booms, wharves, equipment, etc., situated on the Gaspe Peninsula, in the counties of Gaspe and Bonaventure, Province of Quebec, Canada. The mills, equipment, wharves, etc., are situated on the land owned in fee simple, at the mouth of the Grand Pabos River, which forms a natural harbor at its entrance into the Baie des Chaleurs. The Atlantic, Quebec & Western Railroad touches the property with sidings at the mills. This railroad connects at Matapedia with the Intercolonial (a Canadian Government railway) and gives the property an outlet for rail shipments. The company can ship by water from four harbors, Grand Pabos, Little Pabos, Newport and Port Daniel. Four main rivers traverse the tract. Grand Pabos, Little Pabos, West River and Port Daniel River."

"The proceeds of the bond issue will provide funds to pay all indebtedness of the property, furnish ample working capital, increase the capacity of the present lumber mill (now about 80,000 feet per day), erect a pulp mill, logging railroad and other necessary improvements to bring the property to a high state of efficient and economical operation.

"When these improvements are fully completed it is expected that the annual output of lumber will be in excess of 30,000,000 feet per annum and the output of pulp approximately 30,000 tons per annum. The location and erection of the pulp mill, which it is estimated will cost approximately $1,000,000, will be under the direction of Hardy S. Ferguson, of New York. By the construction of additional mills at a later date it is expected to ultimately develop an output in excess of 50,000,000 feet of lumber."

The timber holdings of the company were cruised by Lemieux Brothers & Co., who made the following report on the standing timber and pulp wood:

1,212,000,000 feet balsam at $3 per thousand	$3,636,000
969,600,000 feet spruce at $3 per thousand..	2,908,800
121,200,000 feet cedar at $2 per thousand..	242,400
2,302,800,000 feet merchantable timber	$6,787,200
4,040,000 cords pulp wood at minimum valuation $1 per cord	4,040,000
	$10,827,200

It is expected that the annual production of sulphite pulp will total 30,000 tons. Mr. Whitmer is at present in New Brunswick.

TALC IN CANADA

By T. LINDSAY CROSSLEY

The mineral known as talc occurs in many parts of the world, but only in a few localities is the quality high enough to fill the requirements of the several industries whose products include talc.

Talc is a compound of Magnesia and Silica containing varying proportions of these two ingredients, averaging about two parts of Silica to one part Magnesia. It is apparently derived from the breaking down of other minerals by influences other than weathering and surface action.

Austria, France and Italy have until recently been the chief sources of talc in commerce. In the last fifteen years several deposits have been developed in North America.

In Canada Talc occurs at Madoc in Hastings County, in crystalline limestone and dolomite; at Louisburg in Cape Breton, and in several places in the Eastern Townships serpentine area. The deposit at Louisburg in Cape Breton, in which the Hon. H. Levatt is interested, has recently been examined and is reported on very favorably. The deposit at Madoc in Hastings Co., Ontario, has been developed, and illustrations accompanying this article are from this mine by the courtesy of Mr. Geo. H. Gillespie. These photographs give a fair idea of the character of the deposit and the methods of mining. Electric power is used at this mine and mill. The latter is driven by six fifty h.p. motors and can turn out 30 tons of finished product in 24 hours. This output could be increased to 50 tons by the addition of two more tube mills, which have been provided for. The ore body being worked averages 50 feet wide and between 800 and 900 feet in length. In the course of the last fourteen years, two shafts, one of which is 200 feet, have been sunk. The ore bodies have been drifted on to the extent of over 500 feet at the 200 foot level. There is at present in sight a tonnage that would meet requirements for twenty years at the mill capacity. The crude ore as it is taken from the mine is delivered to bins for storage. From the bins it is taken to be crushed and dried. The ore is then taken to five sets of Sturtevant emery disc grinders from whence it goes through tube mills to the sackers. In the case of some deposits, the crude Talc is not dried before being pulverized. In other mills the Talc is bolted for special cases requiring fineness.



Talc Mills of Geo. H. Gillespie and Co. Madoc, Ont.

Talc in the Textile Industry.

In this industry Talc is used very largely as a filler for cheap fabrics which may carry up to 30% of it by weight. This is introduced in connection with starch. Talc is also used in the manufacture of waterproof fabrics and in fabrics designed to be to some extent fireproof, rendering them non-inflammable.

Talc does not behave toward dye stuffs in the same way as China Clay, and the lustrous nature of its particles affects the play of light on the surface of fabrics. Its use is therefore, except for special effects, limited to white goods.

Talc in the Paper Trade.

Talc is used in paper making in two ways—first as a filler and secondly as a constituent of the paste laid on coated papers used for half tone engraving and fine printing.

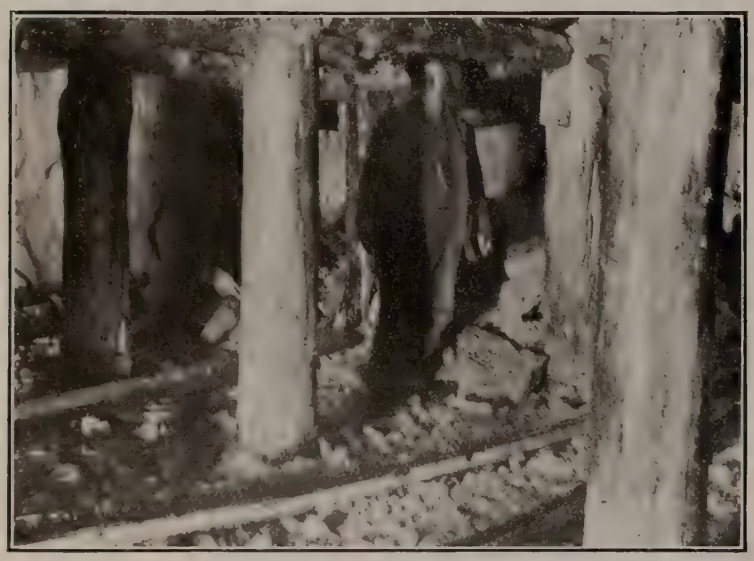
The qualities required of a filling for paper are chiefly fineness, insolubility and generally high white color. A paper filler must not enter into chemical combination with other materials such as rosin, alum, gelatine, used in the sizing or coloring of the fibres. After mixing with the materials in the beating and refining engines, it must be practical to run the mixture over the shaking wire cloth at the end of the paper machine without excessive amounts going through by lack of retention among the fibre materials.

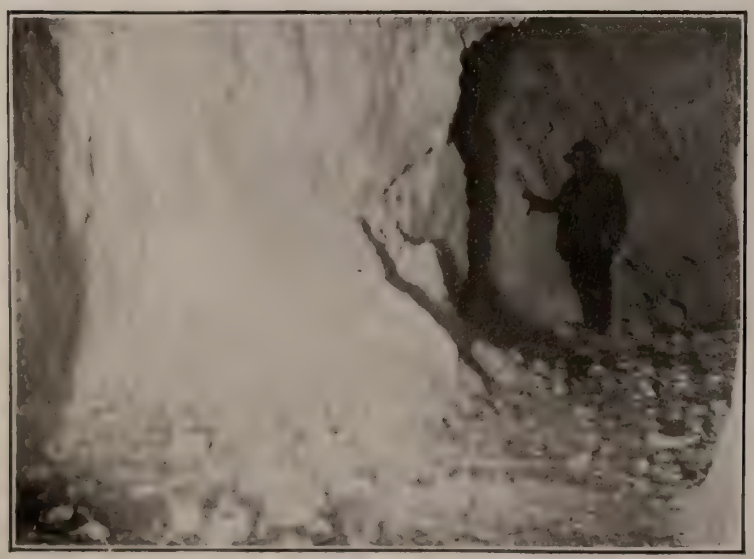
The three filling materials chiefly used are China Clay, Talc and Gypsum or Sulphate of Lime. The last is slightly soluble in water, so that with the large amount of water used in paper making, there is a considerable

IN THE MADOC TALC MINES











Showing comparison of china clay and fibres. (In paper making the clay is more disintegrated than this slide indicates. The granules being broken down into scaly particles.)

loss, and consequently the fine white finish obtained with this filler is very expensive.

The choice in ordinary grades of paper then lies between Talc and China Clay. Both these materials fill the requirements laid down above. It has been found however, that owing to the greater length of its particles as compared with their width, Talc gives a higher retention. It acts very much as a fibrous element. In China Clay, the particles are fragments of the same width as breath in average appearance. Talc has an advantage in color over China Clay, producing a whiter sheet, and its semi-fibrous nature gives a more lustrous finish.

The micro-photographs show clearly the advantage of using Talc as far as retention goes.

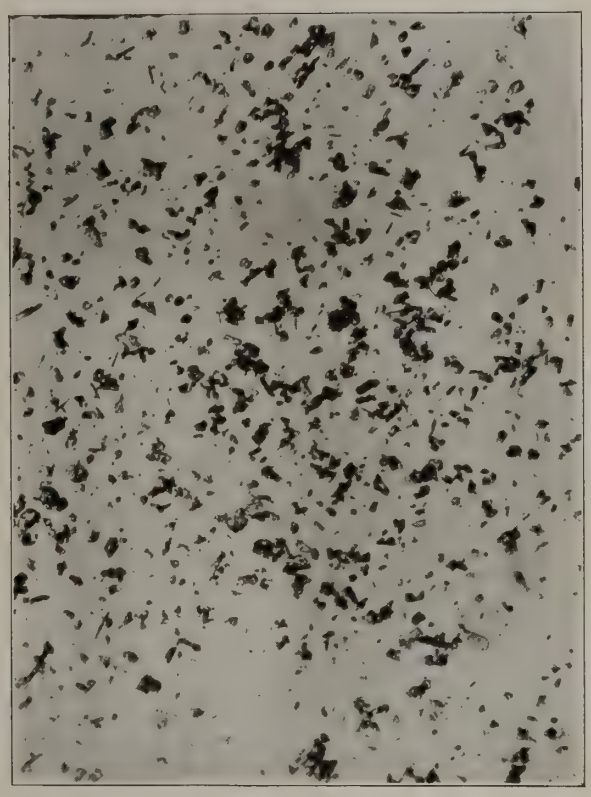
The complaint is made that Talc is hard on calenders, wires, cutting edges, beater bars, and wearing surfaces generally, therefore while admitting its superior quality as a filler, paper mill superintendents do not



European Talc (French), Mag. 62.

care to use it. This complaint is due to two causes, prejudice and the refusal to pay a price for Talc in proportion to increased quality of product. The principal impurities in Talc are Carbonate of Lime, Iron, and Quartz in fine particles.

For sized papers, a Talc containing over 10% of Carbonate of Lime would be objectionable. Less than eight per cent. would not be. Good mineral, however, should not contain more than five per cent. Iron affects color and should not exceed two per cent. Quartz and other gritty matter can be reduced by good handling to a very small figure, and the fineness to which this can be carried depends almost entirely on the price consumers are prepared to pay. It is certain that with larger demand even without higher price, the faults found with Canadian Talc can be eliminated, and an article in some respects even better than the European obtained. In cases that have come before the writer, examination under the microscope showed



Canadian Talc (Madoc), Mag. 62.

a decided advantage in Canadian Talc as compared with French from the viewpoint of fibrous character.

Talc in Other Industries.

Rubber and Insulated Wire.—In these industries the additional qualification of low conductivity is called for. Several large users have found that Talc from Canada has an advantage in this respect. An objection



European Talc, Mag. 62.—More finely ground.

of Lime contained as an impurity, has very little foundation, as a large amount of whiting which is pure Carbonate of Lime is used for similar purposes. Talc is also used for lining rubber moulds.

Toilet Articles.—In this trade a large quantity of Talc is used. Color, feel and freedom from lime are the qualities required. Many users of Talc for toilet articles wash the Talc with dilute Hydrochloric Acid to get rid of such impurities as Iron Oxide and Carbonate of Lime. Canadian Talc has been found to give satisfaction, and is used in quantity in this trade. Some quantity of Talc is also used in foot and glove preparations.

Lubrication.—Talc has been used as a lubricant in cases where great weight is carried on small surface to Talc on the score of the small amount of Carbonate with low speeds. It is not easily squeezed out from the journal. It is sometimes used in light machinery where oil might cause stains in delicate textiles.



China Clay (Cornwall) Mag. 62

Talc exhibits the phenomenon of absorption or the concentration of solutions on its surface, and its use is therefore suggested in analytical work and medical chemistry.

A process has been patented in France for agglomeration of Talc with Sodium Silicate in the manufacture of crayons, plaques, tiles, etc. Talc has been used as an adulterant in such articles of food as flour and meal to the extent of 25% in same cases. It has itself been the subject of adulteration with cheaper minerals or for weighting purposes in which cases Barytes has been used.

As mentioned above, the consumers claim that Canadian Talc is inferior in some ways to European Talc. Generally speaking, these complaints can be placed in one of two classes, prejudiced or commercial. Prejudicial complaints are such as that already cited in which the presence of Carbonate of Lime as an impurity was objected to by an industry which had previously used whiting for the same purpose; as whiting is carbonate of line the weakness of this complaint is evident. Another such was a claim that Canadian Talc had such a high conductivity that it was inferior to the imported article for insulation. Large quantities of Canadian Talc are in reality used because of its superior insulating qualities. Industries paying sixteen dollars a ton for imported Talc, complain that Canadian, which they buy at eight or nine is inferior. It well might be. If a better price can be obtained for the Canadian article, it would be found possible to eliminate the inferiority. This is especially the case with the question of grit which has been complained of in all American Talcs. By the way, it might be noted that Talc consumers in Europe make the same complaint to the producers there.

In the paper industry Talc is used in Europe for its special qualities in spite of its special troubles. A paper maker of long experience told the writer that he had many complaints from users, that talc-filled paper clogged the faces of type. Yet in writing on Talc, Wittel and Welwart (Woch. fur, paper fab. 1911, 4578) claim that Talc is superior to other fillers in its action on type. It is probable that there should be a special technique for Talc as a paper filler, dealing with the sizing of such papers and the provision of specially hardened cutting and wearing parts. The commercial difficulty comes in here and says, "Our market will not stand it." Yet the market imports special grades of high white papers for special purposes and pays good prices for them. It is suggested that the Canadian producers have a market, or will have ere long, that will be discriminating enough to pay for higher grades of paper and loyal enough to demand that they be of Canadian make. The complaints made by the textile industry might be met in similar way being of a very similar nature.

In conclusion, to meet a charge of special pleading, it may be said that this is special pleading. Canadian manufacturers who wish to further the "made in Canada" idea should also make some effort to be able to add "of Canadian materials."

OCEAN MILLS CO., LIMITED.

The Ocean Mills, Limited, has been incorporated as a limited company, with a capital of three million seven hundred thousand dollars, divided into thirty-seven thousand shares. The head office of the company is in Vancouver, B.C., with the following objects: To acquire, construct and operate sawmills, shingle mills, pulp mills, paper mills, sulphite fibre works, box factories, creosoting or wood preserving plants, and other plants for making, dressing, or making merchantable wood products of any kind, and to sell and deal in all lumber, shingles, lath, piles, poles, and products thereof, chemical and wood pulp, sulphite fibre, and paper of all kinds and the products thereof, and generally any wood products and chemical or any other kind of preservative for wood and timbers and woods and timbers treated therewith.

J. R. Booth will this summer install two Manitowoc digesters 50 x 14 ft. each. The additional buildings will be completed during the summer and the digesters installed by the end of October.

MORE VIEWS ON THE NEW TARIFF

(Special to the Pulp and Paper Magazine.)

Montreal, April 30.

The tariff changes relating to pulp and paper has formed the great subject of conversation among the trade. Like on most tariff questions, there seems to be a considerable difference of opinion in regard to how Canada will benefit from the proposed schedule. All are agreed that news mills will profit by the change. The same is largely true of groundwood mills. The sulphite mills seem to be hit by the tariff, although even in this case there were some differences expressed as to the effects. One effect of the new arrangement will be that kraft paper, manilas, hangings and other paper of this kind will suffer. It is also pointed out that Canada will be forced to compete with European countries. In brief, there is a division of opinion as to the benefits to be derived from the change. Lumbermen, on the other hand, are quite jubilant, as free lumber will mean a wider market and increased prices for them. On the other hand, the consumers of lumber are not elated over the change, as prices of lumber which have already advanced, owing to the smaller cut during the past winter, will show a still further advance.

The following views were expressed by Mr. T. J. Stevenson, sales manager for Riordon Pulp & Paper Co., Ltd.:

That the main advantage to the paper industry would be in the case of newspaper manufactured from wood, taken from public lands, as this would be allowed to enter the United States free, whereas previously only newspaper manufactured from pulp, taken from private lands, was permitted to enter free, was the contention of Mr. Stevenson. He further stated that of all the newspaper which entered the United States in February of this year, only 13 per cent. paid duty, the balance, 87 per cent. entering free by virtue of its being manufactured from pulp, which came off private lands. The total amount exported by Canada to the United States during that month, was 12,736 tons, or 530 tons per day. The amount of groundwood pulp and chemical pulp was about the same.

Mr. Stevenson foresaw the stimulation of the paper industry on the continent, and predicted strong competition with Europe in the free products. Norway, Sweden and Germany were heavy producers, and had the advantage over Canada through their better labor markets. Those countries could, therefore, manufacture paper cheaper than Canada.

"The export of box board paper under four cents per pound, admitted free, under section two, will cease," stated Mr. Stevenson. "Groundwood pulp, chemical pulp, which covers soda and kraft pulps, will be admitted free. Under the present tariff, all papers under four cents per pound, if manufactured from wood, gotten from private lands, enters the United States free of duty, upon proof of its origin. If manufactured from public lands, the duty on newspaper is $5.75 per ton; on ground pulp $1.66 per ton; on sulphate pulp $3.33 per ton; on bleached sulphate $5.00, etc. These figures were in vogue under the Payne-Aldrich tariff, and the groundwood under that tariff was free from any other country, if manufactured from unrestricted wood. In section two of the Reciprocity measure, this principal was extended to chemical pulps, and all wood papers under 4 cents per pound. It would now appear that these pulps and newspaper, not more that 2½ cents per pound, will be free from all countries, irrespective of what wood they are produced from. It is thought this would be a great advantage to the newspaper and groundwood mills in Canada. The United States imports very heavily of sulphate pulp from Europe, and under the new provision, European countries will compete."

Continuing Mr. Stevenson said: "Briefly summarized, news and groundwood are admitted free under the new regulations, while chemical pulp is free from private lands, but is subject to a duty if made from wood taken from Crown lands. It is to be hoped that the United States will put chemical pulp in the same class as groundwood. There is no reason why it should be discriminated against in the manner indicated by this treaty. If the Americans want to put a penalty on Crown land wood, that is for them to say, but they should not confine their penalty to chemical pulp. This phase of the agreement looks like a small piece of business, and it is sure to give offence to the Quebec Government. It is too much like a pin prick and too petty for the Americans to allow to crystallize into legislation. The United States now get some 300,000 tons of chemical pulp from Europe. Canada should have a big share of this in return for the one million cords of wood which she sends to the United States. Further, there are a number of mills going into the chemical pulp field, and it seems unfair to discriminate against them. A number of old established mills are branching out and extending their chemical pulp operations, and among others there is a big new mill being erected at Gaspe. Canadian paper men feel that this should be changed, and we are satisfied that when the matter is brought to the attention of the American people that they will see the injustice of this part of the proposed regulations."

When asked regarding his opinion on the proposed tariff changes, Mr. J. A. Acer, of the Laurentide Co., said that it was too soon to express a cut and dried opinion, as the schedule might be considerably altered before it became law. "Undoubtedly there will be a fight in the Senate over this, and it is difficult to know just what will be the final outcome. However, as it stands at present, newsmen will be materially helped, but at the same time they will be thrown open to foreign competition. The sulphite men will be in much the same position as they are at the present time. There will be a reduction in the duty to $2.00 per ton on sulphite made from wood cut from Crown lands, while sulphite made from wood cut from private lands will be free. It seems a queer thing, however, that manufactured paper should be admitted free, while sulphite which is more or less a raw product entering into the manufacture of paper, is subject to duty. The general tendency, however, is favorable to Canadian paper men, and will tend to make American paper manufacturers come to Canada. Just how soon these changes will effect the Americans is difficult to say, but the tendency will be towards forcing them to come to Canada to manufacture."

The New Brunswick Legislature is discussing the question of granting better terms to interests who were about to establish a great pulp and paper plant at Bathurst in Gloucester County, New Brunswick. The request was made that the new Act relating to pulp and paper mill licenses be amended, so that the new company could obtain a lease for 40 years and 10 years instead of 30 and 20 years as at present. This was requested on the ground that it was easier to obtain funds on a 40-year basis than on a 30. Premier Fleming refused to accept the amendment to the law, but stated that if the company required assistance that his Government was prepared to do anything in reason to help them. It was announced that the Dominion Government was prepared to spend $1,000,000 in improving Bathurst harbor and furnishing better railway facilities to the company and to that district. It is said that private and American capital are behind the project.

Other despatches from New Brunswick state that the cut of logs for timber and of pulpwood, will be somewhat smaller than usual owing to the unfavorable weather conditions which prevailed during the year. This is especially true of Southern New Brunswick and parts of Nova Scotia, where the lack of snow seriously interfered with lumbering operations. Lumbermen from that Province state that a good market for New Brunswick lumber is being developed in Montreal and Eastern Ontario, and as a consequence, prices are showing a considerable improvement.—R.

PAPER TRADE IN CONSTANTINOPLE IN 1912

Notwithstanding the war between Italy and Turkey, which started in October, 1911, the paper trade in general has not been affected during the first nine months of the present year, says the Quarterly Trade Journal of the British Chamber of Commerce of Turkey. On the contrary, the sales in Constantinople have shown a considerable increase, and this not only in common printings, for which there has been a great demand for newspapers, but in all other kinds which have been much in demand. The paper trade is classed under three main categories: (a) Writing and printing papers, which includes ordinary non-glazed newspaper, glazed wood paper for printing, glazed wood-free paper for illustrated papers and books, deed and official paper, and commercial and school paper. (b) Wrapping paper: viz., straw paper, spice papers (grey, red and blue), brown wood paper and cardboard and strawboard. (c) Cigarette paper.

Newspaper is being supplied more and more by the Scandinavian countries, owing to the quality being better and prices lower than those of Austria. It is supplied in 40 to 45 grams per square metre, in sheets and rolls, at from 28 to 31 frs. per 100 kilos, c.i.f. Constantinople, less 5 per cent. Even these prices have been reduced owing to Scandinavian competition, which, it would appear, was prepared to get business at almost any figure. In case of pressing needs, however, Austria has the advantage in being able to deliver in a shorter time.

Printing glazed wood paper, much in demand (imports about 1,500 tons), was again, in 1912, the monopoly of a Belgian factory, the quality, whiteness and strength of which no other works has been able to surpass, notwithstanding incessant attempts. The price has risen from 29.50 to 30.50 frs, per 100 kilos, c.i.f. Constantinople, less 5 per cent., and although this firm's terms are considered very difficult, buyers have had to submit to them.

As in preceding years, the government has bought by adjudication very considerable quantities of white glazed wood-free paper for its requirements, and it can be said, without fear of exaggeration, that the imports for the government and the market in general have reached some 4,000 tons per annum. Prices are 40 to 50 frs. per 100 kilos, c.i.f. Constantinople, less 5 per cent. It is imported principally from Austria and Germany—from the latter country since two or three years only.

Commercial letter paper and school paper is supplied almost entirely by Austria, with a little from France and Germany. It is a wood-free paper as above, and to cost is added 3 frs. extra for single lines, 5 frs. for double lines or squares, and printed wrappers extra.

Straw board and straw paper, almost entirely from Holland, weighs 240 to 350 grams per square metre, used for making paper bags, wrapping meat, etc. There is a large consumption, which is increasing, and is estimated at approximately 2,000 tons. Prices have been sustained, and have reached £5 5s. per ton, f.o.b. Amsterdam, 6 per cent. moisture free, 2½ per cent. discount. The finer qualities from France, weight 100 to 110 grams. per square metre especially, are sold at 18.50 to 19 frs. net per 100 kilos, c.i.f. Constantinople. Consumption about 500 to 700 tons. Another lighter straw paper, 40 to 45 grams per square metre, in small sizes and bales, is also imported, but in insignificant quantities, from Bohemia and northern Germany, at from 21 to 22 frs. per 100 kilos., c.i.f. Constantinople, less 3 per cent.

Glazed brown wood paper is imported directly from Finland or through export houses. This was at one time imported from Sweden and Norway, but these countries now do very little owing to their prices and certain exigencies of the manufacturers. The consumption has somewhat decreased owing to the bad silkworm crop in Brussa, and also to the fact that cellulose wrapping paper is being used much more in the novelty and fancy article stores. Imports about 1,000 to 1,200 tons. Prices from 21.50 to 22.50 frs., c.i.f. Constantiople, less 5 per cent.

Cellulose wrapping paper arrives principally glazed on both sides, natural white and colors. The greater quantity was imported from Hungary and Scandinavia. Other countries make sporadic efforts which occasionally succeed. The consumption has barely reached 400 tons per annum, but is regularly increasing. There is a future in this article. Prices for white from 34 to 35 frs. per 100 kilos., and the colors (excepting deep red and indigo blue) 1 to 2 frs. extra, c.i.f. Constantinople, less 5 per cent.

Since the reduced prices, carboard is imported from Austria only. Finland, which also supplied it, has lost the market. The prices, which fluctuate considerably, average 15 to 17 frs. per 100 kilos., c.i.f. Constantinople, less 3 per cent.

As in other branches of commerce, the Balkan war has affected the paper trade, excepting inasmuch as newspaper is concerned, which has been more in demand than ever. Nevertheless, clients in general have shown themselves in excellent colors, and it can be said that this is one of the best branches of trade on the market. Since the commencement of December there has been a slight recovery of business, and this recovery would appear to have a tendency to accentuate.

CONSUMPTION OF PULPWOOD IN CANADA

By R. H. CAMPBELL, Director of Forestry

A total of 1,846,910 cords of pulpwood were cut in Canada during 1912; of this 866,042 cords were manufactured into pulp in Canadian mills while 980,868 cords were exported in the raw or unmanufactured state. This is an increase of 21.5 per cent. over the total cut of 1911—an increase of 28.8 per cent. in manufacture of pulp, an increase of 16.6 per cent in export of raw pulpwood.

The average per cord of pulpwood consumed by Canada's pulp mills decreased from $6.45 to $6.02. The total value of pulpwood used in the industry in 1912 was $5,215,582.

Quebec, Ontario and New Brunswick still head the list of provinces in consumption of pulpwood. British Columbia, however, has increased its consumption by some thirty four thousand cords bringing it up to fourth place ahead of Nova Scotia. A decrease of 18.6 per cent. in consumption is noticed in Ontario during 1913; all other provinces being increased during the year.

The use of balsam fir for pulp manufacture has increased from 17.5 per cent in 1911 to 19 per cent in 1913 and with this there is a decrease in the proportion of spruce from 81.6 per cent. to 78.2 per cent. The increase in the proportion of hemlock used in due to the consumption of this material in British Columbia where over seventeen thousand cords of this material were used in 1912. Western larch men reported for the first time from this province.

The mechanical and sulphite processes still head the list but the sulphate process used practically for the first time in 1912, was employed in manufacturing over 66 thousand cords of pulpwood putting this process third on the list. This replaces the soda process, the use of which decreased by 72.9 per cent.

The export of the finished product, wood-pulp, has increased by 34.1 per cent. The proportion of ground wood and chemical pulp remained practically stationary at about 85 and 15 per cent. respectively. In 1911 over 99 per cent. of the export went to the United States. In 1912 only about 62 per cent. was exported to that country while Great Britian imported almost 37 per cent. and Japan entered the market purchasing 1,046 tons of pulp mostly chemically prepared, China and New Zealand also imported small quantities of Canadian wood-pulp.

Wood-pulp was imported into Canada from the United States, Sweden, Great Britian, Germany and Austria-Hungary in 1912 indicating that in some cases these countries can manufacture pulp cheaper than Canada or that they produce some special grade of material desired by Canadian paper makers. The total value of imports of pulp increased by 83.7 per cent. in 1912.

Canada still exports over half the pulpwood produced in the country. In fact the proportion of wood exported in the raw state increased from 55.6 per cent. in 1911 to 56.1 per cent. in 1912.

New Brunswick and Nova Scotia manufactured less of their pulpwood than in 1911. While the proportions in Ontario remained the same. British Columbia was the only province which reported having manufactured all its pulpwood into pulp in the province.

TABLE 1

Pulpwood, 1911 and 1912, by Provinces:—Total Quantity of Wood used, Total Value, Average Value per Cord and Number of Firms Reporting.

Province	1911				1912			
	Wood Used	Value	Average Value per Cord	Number of Active Mills	Wood Used	Value	Average Value per Cord	Number of Active Mills
	Cords	$	$ c.		Cords	$	$ c.	
Canada	672,288	4,338,024	6.45	47	866,042	5,215,582	6.02	48
Quebec	390,426	2,516,683	6.45	23	578,855	3,386,705	5.85	24
Ontario	213,667	1,457,224	6.82	12	173,903	1,235,343	7.10	11
New Brunswick	45,824	251,858	5.50	4	52,041	287,060	5.52	4
British Columbia	150	1,140	7.60	1	35,067	193,265	5.51	2
Nova Scotia	22,221	111,119	5.00	7	26,176	113,209	4.32	7

TABLE 2

Pulpwood, 1911 and 1912, by Species:—Total Quantity, Total Value and Per Cent. Distribution.

Kind of Wood	1911			1912		
	Quantity	Value	Per Cent.	Quantity	Value	Per Cent.
	Cords.	$		Cords	$	
Total	672,288	4,338,024	100.0	866,042	5,215,582	100.0
Spruce	548,276	3,548,824	81.6	677,747	4,125,695	78.2
Balsam Fir	117,400	750,950	17.5	164,587	855,950	19.0
Hemlock	1,670	8,640	0.2	19,178	105,988	2.2
Poplar	4,186	25,830	0.6	4,405	27,335	0.5
Larch	.....	.....	.....	85	454	†
Pine	.....	.....	.....	40	160	†

† Less than one-tenth of one per cent.

TABLE 3

Pulpwood, 1912, by Provinces, Species and Processes:—Quantity of Wood Used.

Provinces	Total	Spruce	Balsam, Fir	Hemlock	Poplar	Larch	Pine
Total—All Processes							
	Cords	Cords	Cords	Cords	Cords	Cords	Cords
Canada	866,042	677,747	164,587	19,178	4,405	85	40
Quebec	578,855	433,670	141,395	.....	3,790	.....	.....
Ontario	173,903	157,685	15,130	528	560	.....	.....
New Brunswick	52,041	47,381	4,660	.....	.....	.....	.....
British Columbia	35,067	17,224	8	17,750	.....	85	.....
Nova Scotia	26,176	21,787	3,394	900	55	.....	40
Mechanical Process							
Canada	499,226	381,476	111,518	5,492	615	85	40
Quebec	339,987	245,283	94,704	.....	.....	.....	.....
Ontario	110,612	98,792	11,260	.....	560	.....	.....
Nova Scotia	26,176	21,787	3,394	900	55	.....	40
British Columbia	15,441	10,764	.....	4,592	.....	85	.....
New Brunswick	7,010	4,850	2,160	.....	.....	.....	.....
Sulphite Process							
Canada	285,959	225,536	44,337	13,686	2,400	.....	.....
Quebec	166,011	125,652	37,959	.....	2,400	.....	.....
Ontario	63,291	58,893	3,870	528	.....	.....	.....
New Brunswick	37,031	34,531	2,500	.....	.....	.....	.....
British Columbia	19,626	6,460	8	13,158	.....	.....	.....
Sulphate Process							
Canada	66,938	58,885	8,053	.....	.....	.....	.....
Quebec	66,938	58,885	8,053	.....	.....	.....	.....
Soda Process							
Canada	13,919	11,850	679	.....	1,390	.....	.....
Quebec	5,919	3,850	679	.....	1,390	.....	.....
New Brunswick	8,000	8,000	.....	.....	.....	.....	.....

TABLE 5

Export of Wood-Pulp, 1911 and 1912:—Quantity, Total Value, Average Value per Ton, Per Cent. Distribution, and Countries to which Exported.

Kind of Pulp and Countries To Which Exported	1911				1912			
	Quantity	Value	Average Value per Ton	Per Cent.	Quantity	Value	Average Value per Ton	Per Cent.
	Tons	$	$ cts.		Tons	$	$ cts.	
Wood-pulp Exported, aggregate	259,514	4,902,862	18.89	100 0	348,100	5,952,361	17.10	100.0
Total Mechanical Pulp	221,167	3,436,670	15.54	85.2	295,449	3,991,365	13.51	84.9
Total Chemical Pulp	38,347	1,466,492	38.23	14.8	52,651	1,960,996	37.24	15.1
Total United States	257,519	4,872,790	18.92	99.2	218,936	4,525,569	20.67	62.9
Mechanical	219,240	3,408,885	15.55	.....	167,448	2,607,589	15.57	.....
Chemical	38,279	1,463,905	38.24	.....	51,488	1,917,980	37.25	.....
Total Great Britain	1,915	28,472	14.87	.7	127,981	1,384,993	10.82	36.8
Mechanical	1,847	26,185	14.18	.....	127,945	1,383,026	10.81	.....
Chemical	68	2,287	33.63	.....	36	1,867	51.86	.....
Total Japan	.....	.....	.....	.....	1,046	36,665	35.05	0.3
Mechanical	.....	.....	.....	.....	56	750	13.39	.....
Chemical	.....	.....	.....	.....	990	35,915	36.28	.....
Total China	.....	.....	.....	.....	116	4,294	37.02	†
Chemical	.....	.....	.....	.....	116	4,294	37.02	.....
Total New Zealand	.....	.....	.....	.....	21	940	44.76	†
Chemical	.....	.....	.....	.....	21	940	44.76	.....
Total Newfoundland	80	1,600	20.00	†	.....	.....	.....	.....
Mechanical	80	1,600	20.00	.....	.....	.....	.....	.....

† Less than one-tenth of one per cent.

TABLE 4

Pulpwood, 1912, by Provinces, Species and Processes:—Number of Mills Operating, Quantity of Pulpwood Used, Quantity of Pulp Produced, Quantity of each Species of Wood Used, Quantity Used in each Process, Total Cost and Average Cost per Cord.

	Total	Quebec	Ontario	New Brunswick	British Columbia	Nova Scotia
Number of Mills Operating	48	24	11	4	2	7
Pulp Produced—						
Aggregate tons	682,628	459,420	142,257	29,525	25,254	26,176
Mechanical "	499,226	339,987	110,612	7,010	15,441	26,176
Sulphite "	142,974	83,005	31,645	18,515	9,813	.....
Sulphate "	33,469	33,469	.....	.....	.....	.....
Soda "	6,959	2,959	.....	4,000	.....	.....
Wood Used—						
Aggregate cords	866,042	578,855	173,903	52,041	35,067	26,176
Aggregate Cost "	$5,215,582	$3,386,705	$1,235,343	$ 287,060	$193,265	$113,209
Average Cost "	$6.02	$5.85	$7.10	$5.52	$5.51	$4.32
Spruce—						
Total cords	677,747	433,670	157,685	47,381	17,224	21,787
Total Cost	$4,125,695	$2,558,903	$1,116,324	$261,960	$94,977	$93,531
Average Cost	$6.09	$5.90	$7.08	$5.53	$5.51	$4.29
Mechanical cords	381,476	245,283	98,792	4,850	10,764	21,787
Sulphite "	225,536	125,652	58,893	34,531	6,460	.....
Sulphate "	58,885	58,885	.....	.....	.....	.....
Soda "	11,854	3,850	.....	8,000	.....	.....
Balsam Fir—						
Total cords	164,587	141,395	15,130	4,660	8	3,394
Total Cost	$855,950	$804,052	$111,963	$25,100	$42	$14,793
Average Cost	$5.20	$5.69	$7.40	$5.39	$4.25	$4.36
Mechanical cords	111,518	94,704	11,260	2,160	.....	3,394
Sulphite "	44,337	37,959	3,870	2,500	8	.....
Sulphate "	8,053	8,053	.....	.....	.....	.....
Soda "	679	679	.....	.....	.....	.....
Hemlock—						
Total cords	19,178	.....	528	.....	17,750	900
Total Cost	$105,988	.....	$3,696	.....	$97,792	$4,500
Average Cost	$5.53	.....	$7.00	.....	$5.51	$5.00
Mechanical cords	5,492	.....	.....	.....	4,592	900
Sulphite "	13,686	.....	528	.....	13,158	.....
Poplar—						
Total cords	4,405	3,790	560	.....	.....	55
Total Cost	$27,335	$23,750	$3,360	.....	.....	$225
Average Cost	$6.20	$6.27	$6.00	.....	.....	$4.09
Mechanical cords	615	.....	560	.....	.....	55
Sulphite "	2,400	2,400	.....	.....	.....	.....
Soda "	1,390	1,390	.....	.....	.....	.....
Larch—						
Total cords	85	.....	.....	.....	85	.....
Total Cost	$454	.....	.....	.....	$454	.....
Average Cost	$5.34	.....	.....	.....	$5.34	.....
Mechanical cords	85	.....	.....	.....	85	.....
Pine—						
Total cords	40	.....	.....	.....	.....	40
Total Cost	$160	.....	.....	.....	.....	$160
Average Cost	$4.00	.....	.....	.....	.....	$4.00
Mechanical cords	40	.....	.....	.....	.....	40

TABLE 6

Import of Wood-Pulp, 1911 and 1912:—Total value, per cent. distribution and Countries from which Imported.

Countries from which Imported	1911		1912	
	Value	Per Cent.	Value	Per Cent.
	$		$	
Total Value of Imports	94,071	100.0	172,797	100.0
United States	53,167	56.5	100,234	58.0
Sweden	20,558	21.8	64,419	37.3
Great Britain	17,265	18.3	4,764	2.7
Germany	1,720	1.8	2,546	1.5
Austria-Hungary	.....	.....	834	0.5
Norway	1,361	1.4	.....	.....

RUDD PAPER BOX IN A BIG NEW BOXBOARD MILL.

A plan which has been mooted for some time is a boxboard mill for Toronto, which has been promoted by Mr. Rudd, president of the Rudd Paper Box Company. The mill was originally planned for last season, but owing to stiffening of the money market at that time the plans were laid over. It is understood that the capital has now been secured and construction will commence in July. A large 130-inch 6-cylinder machine will be installed to make fifty tons per day, using waste papers entirely, of which Toronto has a large supply. An unauthorized rumor has it that Mr. O. A. Porritt is interested also. This has, however, not been confirmed.

TABLE 7

Canadian Pulpwood Exported Unmanufactured vs. That Manufactured in Canada, 1911 and 1912:—Quantity, Average Value per Cord and Per Cent.

	1911				1912			
	Quantity	Value	Value per Cord	Per Cent.	Quantity	Value	Value per Cord	Per Cent.
	Cords	$	$ cts.		Cords	$	$ cts.	
Canada—								
Production	1,520,227	9,678,616	6.37	100.0	1,846,910	11,911,415	6.45	100.0
Manufacture	672,288	4,338,024	6.45	44.2	866,042	5,215,582	6.02	46.9
Export	847,939	5,340,592	6.29	55.8	980,868	6,695,833	6.82	56.1
Quebec—								
Production	1,026,562	6,475,106	6.31	100.0	1,330,670	8,371,923	6.29	100.0
Manufacture	390,426	2,516,683	6.45	38.0	578,855	3,386,705	5.85	43.5
Export	636,136	3,958,423	6.22	62.0	751,815	4,985,218	6.63	56.5
Ontario—								
Production	302,717	2,028,214	6.70	100.0	246,282	1,692,662	6.87	100.0
Manufacture	213,667	1,457,224	6.82	70.6	173,903	1,235,343	7.10	70.6
Export	89,050	570,990	6.41	29.4	72,379	457,319	6.32	29.4
New Brunswick—								
Production	168,522	1,062,817	6.31	100.0	202,942	1,492,567	7.35	100.0
Manufacture	45,824	251,858	5.50	27.2	52,041	287,060	5.52	25.6
Export	122,698	810,959	6.61	72.8	150,901	1,205,507	7.99	74.3
British Columbia—								
Production	150	1,140	7.60	100.0	35,067	193,265	5.51	100.0
Manufacture	150	1,140	7.60	100.0	35,067	193,265	5.51	100.0
Export								
Nova Scotia—								
Production	22,276	111,339	5.00	100.0	31,949	160,998	5.04	100.0
Manufacture	22,221	111,119	5.00	99.7	26,176	113,209	4.32	81.9
Export	55	220	4.00	0.2	5,773	47,789	8.27	18.1

WATER, ITS PURIFICATION AND USE IN THE INDUSTRIES.

By William Wallace Christie, Consulting Engineer. Published by D. Van Nostrand Company, New York; 219 pages, 171 illustrations. Price, $2.00.

The author is already well known to steam power engineers through his books on "Chimney Formulae and Tables," "Chimney Design and Theory," "Boiler Waters" and "Furnace Draft." In this later work he has produced a valuable reference book on water purification for the industries.

The descriptions and illustrations relating to the various water softening processes are especially clear and complete and the colored plates which relate to this subject serve greatly to assist in an understanding of the devices used in industrial water treatment.

The first chapter gives a description of the sources of water and the special properties required in numerous industries; such as concrete construction, brewing, dyeing and bleaching, ice-making, laundry work, soap and paper manufacture, steaming and sugar refining. Then follow three chapters on the various cold and hot processes of water softening and the results accomplished by such treatment.

Chapter V is devoted to a short description of pressure filters, and Chapter VI to sterilization, distillation and aeration. Then follows a brief description of slow sand and open mechanical filters. The three final chapters are on the measurement of water, the effect of oil in boiler water and useful information relating to water measurement and treatment.

If the title of the book were "The Purification of Water for Use in the Industries" it would more nearly represent the character of its contents as an adequate consideration of municipal water purification is hardly the intention of the author.

Mr. Christie has given us a most valuable reference work on the treatment of water supply for industrial use and one which will meet the needs of those who desire to get the best results from water used for steaming or other manufacturing purposes.

VOTE FOR WRAPPED BREAD.

Returns from the food and drug ballot conducted by Dr. Wiley for his department in Good Housekeeping, were 6,000 votes, and 3,800 of them that bread be wrapped in paper, was the fifth in importance.

This shows, says the report, an increasing interest in this reform and anyone who has watched the delivery boy hug a bundle of unwrapped bread against his dirty coat, his bare hands having just handled the reins or stroked the flank of his horse, or seen prospective purchasers finger and poke various loaves before making a selection, is apt to inquire a growing fondness for this reform and to feel that to demand purity of grain and flour and sanitation of bakeries, only to have the finished loaf stand uncovered in the dusty shop and then be delivered in this primitive fashion, is rather straining at germs and swallowing dirt wholesale.

The determination increases for paper wrapped bread, a benefit to bread consumers and the paper trade.

The U. S. Forest Service has issued a review of the Forest Service Investigations. It shows how comprehensive has been their work, and is a compliment to those responsible for the bureau.

THE POWELL RIVER PAPER COMPANY'S NEW PLANT

The Powell River Paper Co. began making paper in the early part of 1912. The company is now doubling its machine equipment and more than doubling its output. The first machine room was 270 feet long by 82 feet wide, and there has been now built a new machine room 270 feet long by 91 feet wide. In the new machine room are two 184-inch fourdriniers, and these two new machines will be running in June so that the mill will then have a daily capacity of 240 tons, all of newsprint except that the mill, of course, will make its own mill wrappers. These machines are driven by motors, have 5 feet diameter dryers and are running steadily at 650 feet a minute.

The beater room is 208 feet long and 80 feet wide, and the equipment for the two old machines consists of five 2000 pound Waterous beaters and two E. D. Jones & Sons Majestic Jordans, but when this room is completed the beaters will be replaced by mixing tanks while two more Jordans will be added.

The entire mill is driven by electricity, there not being a steam engine in the entire plant, except for heating apparatus and an emergency lighting unit. As originally installed the generator room contains two 1500 kw. generators and the company is now installing a new 2000 kw. generator. The water wheels are by which can be burned either separately or together and this installation has proven not only very efficient but economical.

The plant has an exceptionally well equipped machine shop which is said to be the equal of anything in the paper mill line on the Pacific coast, having connected with it a foundry for casting iron, brass, etc.

The mill output is shipped direct from the mill dock and is all water shipment, none of it going by rail.

All the buildings are of reinforced concrete, the construction being of highest order and the equipment of the most modern type.

The paper produced is of excellent quality and has demonstrated the feasibility of making pulp and paper from British Columbia wood.

The total hydraulic power available at Powell River is estimated at about 40,000 hp. and the company's limits are said to contain easily a perpetual supply of pulpwood for at least 400 tons of newspaper daily so that this company may be expected to increase its production as fast as the market conditions will warrant it.

The company has built up for its employees an excellent town with water supply and sewage systems and it is a surprising sight to passengers on the passing



The Allis-Chalmers-Bullock Co., Ltd., of Canada, and the Plant Iron Works, of Dayton, Ohio, and operate under a head of 162 feet. There are about 150 motors in the mill, ranging from 5 to 400 horsepower.

The ground wood mill as originally constructed contained 12 Waterous grinders for 32-inch wood. The stones are 54 inch diameter by 36-inch face, direct connected and installed in two lines of six each, the water wheels being in spiral cases. New additions now being made will give the mill twenty-four grinders with an output of 200 tons of ground wood a day. The building which contains these grinders is 216 feet long and 60 feet wide.

The wood room which is 130 feet wide and 220 feet long contains a 15 foot band saw, slashers and all the other necessary up-to-date equipment and can handle logs up to 12 feet in diameter. The wood comes from points from 60 to 100 miles up the coast and is towed down to the mills log slip at a very low cost for transportation.

The boiler house which is 140 feet long and 84 feet wide contains fourteen horizontal return tubular boilers and two Babcock and Wilcox water tube boilers. The fuel used is California fuel oil and mill refuse boats which make Powell River a daily port of calls, after the rugged and practically uninhabited coast which precedes it. The managing director, is Norman R. Lang, formerly manager of the Willamette Mill at Oregon City, Oregon.

The mill was built and is largely owned by the well known lumber people of Minneapolis, The Brooks-Scanlon Lumber Company.

The following additional data regarding Powell River Co. mill is presented through the courtesy of the managing director:

The mill is located on the Gulf of Georgia, about seventy-five miles north of Vancouver, B.C., where a daily boat service in either direction is available, but no rail connections.

All the buildings except the acid tower, are constructed of concrete, the equipment being modern in every respect.

Two Pusey & Jones machines are now running, one being 184-in. wire and the other 156-in. wire. They are now installing two 184-inch wire Pusey & Jones machines and expect to have them running within the next thirty to sixty days, thus increasing the out-

put to 225 tons per diem. The present machines are running at 650 feet per minute.

The sulphite mill has two digesters. Acid is made by the tower system.

The company owns a tract of 3,000 acres at Powell River, a portion of which has been subdivided into a townsite where attractive cottages are rented to the employees at a very low rate. These are equipped with every modern convenience. An athletic field upon which baseball, lacrosse, football, etc., will be played has just been completed and an athletic club is to be formed this spring.

A club house containing gymnasium, baths, showers, club room, reading room, etc., will be at the disposal of the club. All employees of the compay are eligible to become members of the club which will be operated jointly by the company and the employees.—Paper.

EXPRESS RATE REDUCTION.

(Special to the Pulp and Paper Magazine.)

Ottawa, April 28, 1913.

A twenty per cent. reduction in express rates in Western Canada has been made by an order of the Railway Commission issued last week. Rates in the East are left alone for the present until the board has obtained further information as to the working out of the reductions already made.

This news is of great interest to shippers of pulp and paper, and particularly wholesale and retail dealers in the same. A rearrangement of Canadian express rates was made some years ago by the board under the late Judge Mabee. Last autumn the commissioners took the matter up again and the announced reduction is the result.

As regards Eastern rates the board finds that the Canadian Express Company, which does most of the express business in the East, has experienced a falling off in its profits from 13.1 to $.09 per cent. since the board issued its former order. Although this order made no general reduction in Eastern Canada the judgment says that through its more generous classification and graduate scale, increased carrying liability, specific reductions and the extension of free delivery and collection limits it really decreased rates but not sufficiently to have been appreciated by the average shipper. The decrease in the Canadian Express Company's profits, however, it considers due rather to increased expenses of operation rather than to reduced rates, but still thinks it of sufficient import to prevent any immediate further reduction of Eastern rates.

In the matter of rates in the prairie provinces and British Columbia, however, the judgment finds they are unreasonable and that reasons of increased operating cost and less density of traffic in the West which have been advanced have been given undue weight. A twenty per cent. reduction in the standard maximum tariffs with the same minimum charge as before is accordingly ordered.—Mac.

The Wayagamack Pulp & Paper Co., Limited, has sold $500,000 first mortgage 6 per cent. bonds for the purpose of installing a plant for the manufacture of fine grades of paper. These bonds are in denominations of $100, $500 and $1,000 due in 1951. The amount of bonds outstanding is brought up to $3,500,000 out of an authorized issue of $5,000,000. The company is turning out Kraft paper at the rate of 50 tons a day.

MASTIC FLOORING FOR INDUSTRIAL PLANTS.

The modern industrial establishment, with its complex machinery, elaborate factory systems and skilled operatives, offers a noteworthy example of evolution from crude and inefficient methods.

Not only have mechanical devices been developed to a high state of perfection in the past few decades in order to keep pace with competition, but changes of equal importance have been wrought in the construction of factory buildings, with the object of contributing to the safety, comfort and efficiency of the operatives. Among those details which have received the attention of experts is the subject of flooring. The problem of flooring the factory is a difficult one, but the obstacles which present themselves in the average plant seem at last to have been overcome by a flooring material known as J.-M. Mastic.

This flooring is unequalled for factory and warehouse use, even under the heaviest trucking conditions, and on account of its noiseless character is a boon in plants where there is considerable trucking. Another feature in its favor is its peculiar holding quality which prevents slipping. J.-M. Mastic Flooring provides a surface that is water proof and at the same time practically wear proof under ordinary service conditions. It is also unaffected by acids, alkali and brine. Being waterproof it is absolutely sanitary, as it can be quickly and thoroughly cleaned by the simple process of flushing after which it dries out immediately. It will not originate dust, a point of vital importance in establishments where it is imperative to keep machinery and goods free from dust.

The base of this flooring is asphalt mastic, a product in which a finely graded mineral aggregate is bonded together by an asphaltic cement or binder. The mineral aggregate in the material, as made up, will pass through a wire screen ranging from 80 to 200 mesh in fineness.

J.-M. Mastic Flooring can be made in any consistency between extreme hardness and softness and, while always dense, possesses a certain amount of resiliency. As it does not cause footsoreness and fatigue like concrete and other non-yielding floor surfaces, it adds greatly to the efficiency as well as to the comfort of employes in machine shops, factories and other industries, who are compelled to stand while at work. Furthermore, being damp-proof, it is an efficient protection against ailments common to damp conditions. It can be laid over any foundation which is firm and stable, and may be applied over wood, brick, concrete or tile already in place. In new construction concrete or heavy mill construction is the most desirable.

J.-M. Mastic Flooring is easily repaired if changes in the floor surface are made necessary at any time. It adds very little to the dead load, as the standard thickness of 1½ inches weighs only 18 pounds to the square foot in place. This thickness is sufficient for ordinary trucking requirements, but can be varied to meet conditions, ranging from 1 inch for lavatories where the requirements are very light, to 3 inches in thickness for loading docks where the requirements are correspondingly severe.

The H. W. Johns Manville Co., New York, manufacturers of J.-M. Mastic, will be glad to send a booklet to anyone interested in the subject of flooring. This concern maintains a thoroughly equipped engineering department which co-operates with engineers and architects in handling flooring and waterproofing work of every nature.

BRITISH TRADE NEWS

(Special to the Pulp and Paper Magazine.)

London, April 27, 1913.

The British Government returns for paper show that the export trade of the United Kingdom in March had a substantial increase and the fact indicates that the consumption of raw materials is growing proportionately. The figures are: Imports, £577,177, a decrease of £14,368 compared with March, 1912; exports, £310,964, an increase of £24,504 over March last year; re-exports, £18,262, an increase of £1,821. Since the first of January to the end of March the returns show: Imports, £1,806,883, an increase of £131,990 over the first three months of 1912; exports, £956,707, an increase of £59,051; re-exports, £61,526, an increase of £13,082 over the corresponding period in 1912. These figures include all kinds of paper. Taking March first of all, no printings or writings on reels, were received from Newfoundland during the month, but the three months total stand at £36,850 as against £16,010 for the first three months in 1912. Norway was the highest exporter to the British markets in March, though her three months' total values show a reduction of £15,012. For printings and writings not on reels, Germany was the highest exporter in March (£25,391), Norway next £15,959), and the United States (£3,167) the lowest. Hangings show a reduction all round, Germany (£7,250), being the biggest exporter. In coated papers Germany was the largest exporter (£12,193), with Belgium next (£4,905), and the United States (£1,794). The only country showing an increase is France (£1,941 against £1,545). In packings and wrappings Sweden tops the imports at £70,346 (an increase of £4,520); Germany, £54,477 next (an increase of 7949); with Norway (750,374), and Belgium (£16,953) following. The exports of the British paper makers show that in writings Australia was the best customer in March, the total reaching £12,015, British India was next at £4,695, and Canada imported £1,824 worth, compared to £597 in March, 1912. Australia was also the biggest customer for printings, the total reaching £42,669. Canada imported £8,430 worth compared with £7,717 in March, 1912, whilst the totals for the three months are £39,293 as against £25,750. Amongst the foreign countries exported to were France £12,565, an increase of £2,500; United States, £3,707, a reduction of £400; other countries £36,932, an increase of £600. Under the heading "unenumerated papers" Canada imported £855 worth, compared with £727 in March last year.

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The government returns of wood pulp show the position of imports as follows: Mechanical wet, £1,199 worth from Canada (compared with £327 in March, 1912); Norway, £78,877 (compared with £52,060 in March, 1912); Sweden, £2,040 (compared with £1,896 in March, 1912). Canada's total for the three months of this year reached £2,909 as against £10,220 for the corresponding period of last year. Norway was the largest exporter during the quarter, the totals extending to £211,367, an increase of £49,771. Other figures are: Bleached chemical dry, £16,144 (compared with £10,690 in March, 1912); unbleached dry, £82,121 (compared with £133,482); chemical, £885 (compared with £2,008 in March last year). Mechanical dry, £346 (compared with £3,536 in March, 1912). The grand totals are: March, 1913, £181,582; March, 1912, £203,999.

Through the Canadian newspapers that have reached England recently, it is announced that German "speculators" have their eye on Canada's resources for the production of wood pulp and, also, for the establishment of pulp mills. The news—whether it be correct or incorrect—is looked upon with a certain amount of suspicion in London pulp and paper circles, as it is a known fact that the Germans are in a tight corner at present as regards money. The Austrians have increased their prices for timber and Russia has done likewise, so much so that the Germans are seeking fresh pastures for their raw materials. In the London money markets it is reported that money is so scarce on the German side that from 4¾ per cent. to 6 per cent. is charged on private loans, and as much as 7 and 8 per cent. on short loans—in fact the money markets of Germany have been the topic of discussion for some time past in the English capital. Your correspondent has been informed that there is a tremendous shortage and his attention was also directed to the shortage of money in industrial circles and the recent speech of the German Secretary of State for the Imperial Treasury, who opened the debate on the first reading of the Taxation Bills. He said: "It is impossible to propose a loan. I can assure you, for my part, that I would not accept the responsibility, and nobody else would do so in my place. . . Even the service of a loan would demand new taxation on a large scale, and in the present conditions of the market an issue would be extremeely unsatisfactory. A loan, moreover, would mean abroad thinly veiled bankruptcy. . . ." Is it any wonder Germans are after Canada's resources!

* * *

Two innovations introduced into domestic life in the United Kingdom are the use of papers in boot making, and the use of towels, made from paper, which are supplied in some of the public dressing rooms. According to the "'medical circular" the paper towels from a hygienic point of view appear to be irreproachable, as well as economical, and they are fastly gaining public favor, like the Japanese serviette, which is to-day a valuable adjunct at the luncheon or dining table. The paper used in boot making is of Kraft and blotting, the latter being the most popular. Paper, however, is being used so much that leather manufacturers are crying out against it competition. On April 3 the half-yearly conference of the National Federation of Boot Trade Associations was held in Bradford and a protest was raised against the use of blotting paper insoles in boots made for children as the paper absorbed the damp and could not be dried in a night. It was pointed out that these difficulties could be overcome and that ladies nowadays looked for footwear with a reputation for lightness and daintiness and for many purposes there were other materials than leather that were better suited for boot and shoe manufacturers. The only innovation that appears not to be popular is the paper drinking cup. One London authority has already rejected it for use at public fountains, for reasons best known to the members that constitute it.

* * *

The twenty-third ordinary general meeting of Edward Lloyd, Ltd., was held in London on April 2 and the report, a synopsis of which was reported in the

last issue of the Pulp and Paper Magazine, was presented and adopted. Mr. Frank Lloyd in moving the adoption of the report, said a reduction of £4,040 in the company's net profits for 1912 could not be considered unsatisfactory seeing that in common with the majority of industrial companies their costs were seriously increased as the result of the coal strikes in March and the cessation of work of the transport workers of the Thames and Medway for a period of ten weeks in the summer. The company had considerable difficulty in maintaining a supply of raw material throughout the latter period, as they were compelled to divert a number of steamers to other ports and obtain supplies through other channels. They managed, however, at great cost to keep all their customers supplied throughout the two troublesome periods, but the heavy additional expenses so incurred robbed the company of a proper return on the great capital outlay on new plant and machinery installed at the Sittingbourne (Kent) mill in 1911 and 1912. The wood pulp mills in Norway ran very well throughout the whole year, the supply of water having been very steady. Unfortunately the price of timber continued to rise in all pulp producing countries, and the present high level of freights tended to handicap the company in the cost of their raw materials.

* * *

Price & Price, Ltd., have lost the services of Victor Hvistendahl in London. He has taken up a partnership with J. N. Juel at 27, Skippegaden, Christiania, but will continue as a buying agent for his old firm which has offices as wood pulp agents in New York, Norway, and various centres in England and Scotland. By his departure the British wood pulp trade loses a keen, level-headed business man, and during his stay in London he worked up a good connection for Price & Price, Ltd. Mr. Hvistendahl will devote his attention in the future to the export trade between Norway and North America, and the United Kingdom. Prior to joining Price & Price, Ltd., he managed the wood pulp department of J. E. Salvesen & Co., Ltd., and was also engaged in the pulp trade in Germany and France. He is a man of varied experience and knows a good deal of the requirements of the American and Canadian markets. Recently there have been a number of changes in the offices of wood pulp importers in the United Kingdom, and another interesting announcement your correspondent has to make is, that Mr. Harry Clegg has started business on his own as an agent for wood pulp and papermakers' supplies at Examiner Buildings, Strutt street, Cross Street, Manchester. Those interested in paperboards will be interested to know that the Limehouse Paperboard Mills, London, will start work in two months' time, and W. H. Silvester is to be works manager. R. Hough, of London, who holds a Toronto agency, is interested in these paperboard mills.

* * *

The death has occurred of Mr. John H. Macnarey, who was for 47 years with Bentley and Jackson, the well-known papermakers' engineers of Lodge Bank Works, Bury. Mr. Macnarey was a thorough and practical engineer, having worked himself up from the bottom of the ladder and by his death the paper industry of the United Kingdom has lost a very good man. During his career he visited Canada and the United States on business for his firm, mostly in connection with expert matters, and his advice was always appreciated and valued. He was a nephew of the late Daniel Bentley, one of the founders of Bentley & Jackson, and a cousin of the present Mr. Geo. Bentley. Mr. Macnarey, who was 68 years of age, met his death under singular circumstances. He was suffering from a bad tooth, but was very reluctant to have it drawn. However, he was persuaded to undergo the operation and everything turned out successful. When he left the works at night he went home and rested and later discovered a swelling in his throat. A doctor was called in and Mr. Macnarey was treated, and told not to rest in a reclining position. Consequently he had to sit up all night and the next morning he stood up from his chair and with without exclaiming a word expired. It was found that he died from a dilated blood vessel in the neck and consequent suffocation thereon. His loss in England is deeply mourned.

* * *

Fred Fielding, a well-known man in the English paper industry, who was sometime ago appointed managing director of the Kotka Celluslosefabrik, Kotka, has been selected as consulting paper and pulp maker to the German and Austrian Textilose Co., a firm that has under consideration the question of building a large pulp mill in Canada. Mr. Fielding, who comes of a paper-making family, has special technical and practical qualifications, and his new appointment will cover a three years' engagement at a high salary. It is anticipated that the mill in Canada will be a most up-to-date structure in every way, and no expense will be spared in its erection. The Textilose Co. are already building mills in France and Italy and Spain with the object of producing strong Kraft paper which will be subsequently woven into textile fabrics.

* * *

At the London Bankruptcy Court on April 8, it was reported that F. G. Stokes, a debtor, who had been in the pulp trade and for many years traded in North America and promoted the Grand River Timber and Pulp Co., had died since a receiving order was made against him in December last.

* * *

The actual formation of the Canadian Pulp and Paper Association has been received in London with much gratification. One of the trade journals in announcing the fact says: "The lack of legitimate information on the ordinary facts of the pulp and paper industry in Canada has been felt for years, and it is fully anticipated that the present newly-formed association will prove most useful from many points of view."

NEW JAPANESE TREATY.

(Special to the Pulp and Paper Magazine.)

Ottawa, April 28, 1913.

A great export trade from Canada to Japan will be built up in wood pulp and lumber as a result of the treaty just concluded between the two countries, is the opinion of Mr. Y. A. Yori, Japanese consul in Vancouver, who was in the city last week and was seen by your correspondent.

"The new treaty will bring Canada and Japan into much closer trade relations," said Mr. Yori. "Business men interested in your lumber and pulp industries have told me there are splendid prospects for the building up of a great trade between Canada and Japan in the export from your country to ours of those commodities. Japan is open for the importation of mechanical and sulphite pulp, both kinds. We manufacture all kinds of paper in Japan now, as you know."
—Mac.

NEW PATENTS

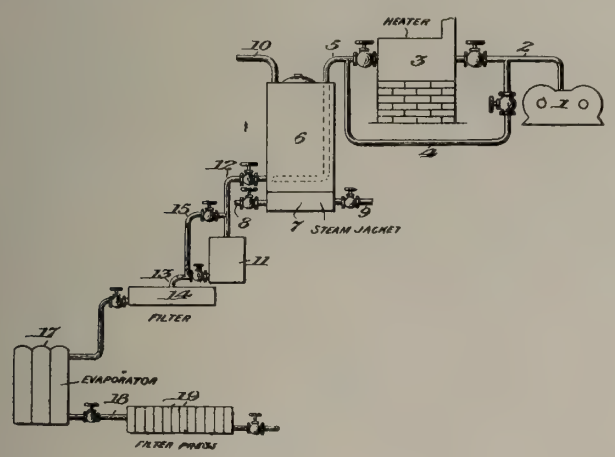
All patents are specially compiled for the PULP & PAPER MAGAZINE. Those of United States are by Davis & Davis, Patent Attorneys, Washington, D.C. Full particulars with drawings may be had by addressing the Commissioner of Patents, Washington, D.C., enclosing five cents per patent. Canadian patent particulars may be obtained from the PatentOffice, Ottawa. In all cases give number of patent. We also carry brief descriptions of important English, French and German patents

PROCESS OF CONCENTRATING SULPHITE WASTE LIQUOR.

U. S. Patent No. 1,057,416. Carleton Ellis, Montclair, New Jersey, patentee.

This invention relates to the concentration or utilization of waste sulphite liquor and to the process of making same and relates particularly to a method of concentration whereby hydrolytic changes are brought about during the concentration which result in the production of a concentrated liquor having many useful properties.

In the manufacture of concentrated waste sulphite liquor, it has heretofore been proposed to neutralize the liquor and concentrate it in a multiple effect vacuum pan as, for instance, the Ekman process, German patent 81,643, etc. The treatment of sulphite liquor in this manner results in its concentration without any substantial change in its chemical composition and therefore does not succeed in developing to the highest degree the useful dextrinous properties which are secured by treatment in the manner hereinafter describd.



By the present process, the crude unconcentrated liquor is first preferably blown with air, in order to remove any free sulphurous acid, which acid later may be recovered by passing the sulphurous-acid-containing air into a suitable absorbing chamber. The air used for this purpose may be heated or the liquor itself may be warmed, or both the air and liquor may be used in a heated condition. The sulphurous acid removed may be converted into lime sulphite or lime and magnesium sulphite or bi-sulphite suitable for use again in the pulp digesters. After the liquor has been freed from a substantial proportion of free sulphurous acid gas, it is treated with ordinary quicklime or ordinary dolomite lime or with soda pulp waste lye until it is alkaline. It may then be filtered through a filter bed and conducted into a vacuum pan which preferably should be a multiple effect evaporator in order to secure rapid and inexpensive concentration. Here the liquor is evaporated to a consistency of 25 to 33 degrees Be. and during this operation, owing to the alkaline character of the liquor, reactions occur which produce the dextrinous bodies desired.

As a modification, the lime or other alkali added to produce an alkaline reaction may be introduced into the liquor prior to the air treatment, and by aeration in the presence of an alkaline body, dextrinous changes are set up which may be satisfactorily completed in the evaporators. After passing through the evaporators, the liquor may be run through a filter press in order to remove certain insoluble products which are formed as the result of the alkaline hydrolysis, and by such filtration a clear transparent liquor is produced. This may be rendered neutral or acid as desired.

A satisfactory method of securing the alkaline solution is that of neutralization to a large extent with lime and the subsequent addition of soda pulp waste liquor to secure an alkaline reaction. Suitable proportions of lime to caustic soda are 7:1 up to 10:1. Instead of soda pulp waste liquor carbonate of soda or caustic soda may be employed.

The accompanying diagrammatic drawings show in elevation the manner in which the process may be carried out.

In the drawings one is a pressure blower supplying air to the aerating chamber 6 through the pipe 2, preheater 3 and pipe 5. The by-pass is arranged to shunt cold air around the preheater 3, when the air is used at ordinary temperatures. The air discharges at the bottom of the aerating chamber 6 and escapes through the pipe 10. The chamber 6 is provided with a double bottom 7, through which steam is passed by the means of inlet 8 and outlet 9. From the aerating chamber, a pipe 12 leads to the settling tank 11. This is connected with the filter bed 14 by the pipe 13. A by-pass 15 permits of cutting out of tank 11 if desired. From the filter bed, a pipe 16 leads to the evaporator 17, and a discharge pipe 18 leads from the evaporator 17 to the filter press 19.

In carrying out the invention with the apparatus above indicated, the tank 6 is filled with waste sulphite liquor and is preferably heated to a temperature of about 40 degrees. Air at a temperature of 60 or 80 degrees C. is introduced into the tank under pressure exerted by the blower 1. The free sulphurous acid is removed with the air which escapes through the exit pipe 10. Lime may then be added to make an alkaline solution and the liquor further treated with heated air allowing the temperature of the liquor to gradually rise until it reaches about 60 degrees C. At this point, the liquor may be run into the filtering chamber 11 and then through the filter bed 14. The clear liquid from the filter bed 14 passes into the multiple effect evaporator 17 and is there reduced to a gravity of from 25 to 33° Be. or thereabout, at the same time, being hydrolyzed and partially converted into dextrinous bodies or bodies of that character, with the formation of a small amount of insoluble material. If hydrolysis is not carried on in the tank 6 by the addition of lime to alkalinity with subsequent air treatment, the treatment in the settling tank 11 may be omitted and the liquor may be sent direct to the filter bed 14 by the shunt 15. The liquor passed in this manner has many uses. For example, it may be employed as a briqueting material or

binder in the manufacture of fuel briquets and a binder for similar bonding operations. It may be used as a paper size and especially as a size and mordant in conjunction with gelatin or glue. It may be salted out from its concentrated solution as a precipitate which may be dried and used as a dextrin substitute. The drying may be carried out by means of heated air in admixture with the atomized concentrated liquor. The liquor may be acidified and tanning compositions produced therefrom, or if desired, rendered entirely neutral and used as an addition to tanning extracts. For tanning purposes, the liquor is of a more useful character than that produced by evaporation of a neutral liquor as the hydrolytic changes set up in the composition during its treatment in alkaline solution, result in the elimination of certain of the semi-resinous bodies which are detrimental to leather. Emulsions may be made from it with mineral oils such as kerosene oil and the like producing useful insecticides. Emulsions may also be made from tar acids and coal tar and the like. Some of these emulsions are particularly useful in the laying of road dust. The liquor of itself dries to a rather brittle product, which is not especially well adapted to be used alone as a road dust layer, but in conjunction with a small amount of calcium chloride or magnesium chloride, a desirable dust layer and road binder is secured.

The formaldehyde addition products have some uses as a disinfectant and in connection with the sizing and waterproofing of paper with glue. The tar acid compositions may be used as sheep dips as the sulphite liquor in the present form is a useful substitute for the rosin soap ordinarily employed. A neutral liquor may be used as an addition to prepared foods intended for horses and cattle and acts as a binder and nutrient material. For this purpose, it is preferable to push the hydrolysis as far as possible in order to make the composition readily assimilable.

PROCESS FOR THE PRODUCTION OF MECHANICAL WOOD PULP.

Guy C. Howard, of Seattle, Washington, Patentee.—U. S. Patent No. 1,057,151.

This invention relates to improvements in processes for the production of mechanical wood pulp and particularly to improvements to the process disclosed in my prior Patent No. 997,064. In the said patent I describe a method of producing wood pulp consisting of subjecting a quantity of fibre bundles to disintegrating action, as in a tube mill containing balls of certain dimensions relative to the sizes of said fibre bundles and reducing the latter to a desired degree of fineness, subjecting the resulting reduced fibre bundles to similar treatment by balls of reduced sizes, and continuing in further like operation to reduce the sizes of said balls to correspond with the progressively reducing sizes of the fibre bundles.

It is found that in the reduction of fibrous material by the methods outlined there is a considerable advantage in maintaining as far as practicable the predetermined ratio of magnitude between the balls of the several tube mills and the fibre bundles being reduced therein. In the progressive operation of the mill the fibrous contents are gradually reduced to a relatively uniform size, in which the fibre bundles of an average or mean dimensions are suitable for introduction within the next mill in the series while a certain proportion of such material is of larger size than that intended for the economical operation of the second mill and should advantageously be returned to the original mill for further reduction. In like manner a quantity of the product of the first mill may be disintegrated to a size smaller than that requisite for the second mill or perhaps may be sufficiently reduced to approximate the final desired product, in which case it would be wasteful and contrary to economical operation to subject the material to further reduction. In the one case the action

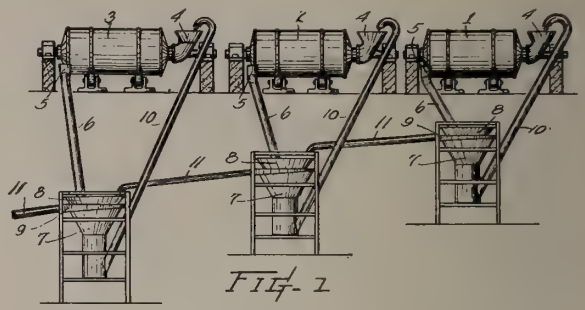


FIG. 1

of the balls of the second mill on material larger than for which they were intended would result in inefficient operation and in the latter cases material of proper final size or nearly so would be acted upon to be further reduced beyond a desired minimum to the damage of the product by pulverization or undue shortening of the fibre lengths and unnecessarily reducing the capacity of the apparatus by continued working upon a finished material.

It is the object of the present invention to improve the present methods of treating wood pulp in the process of manufacture by subjecting the output of the several grinding mills to classification and separation into grades which, generally stated, respectively comprise matter sufficiently disintegrated to be more effectively treated in subsequent steps in the process and material upon which the reducing action has not been sufficiently complete and which may advantageously be returned to the grinding mill recently quitted.

A further object of the invention is to provide devices for classifying the product of the several grinding mills and automatically distributing the graded

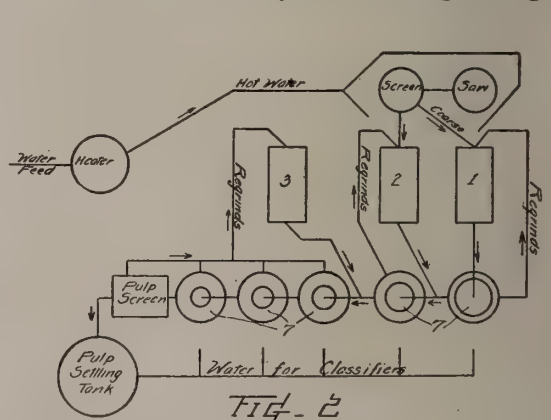


FIG. 2

material to subsequent mills in the series for further grinding through like classifying devices which respectively retain a predetermined size of material suitable for the mill with which they are related and pass all smaller sized matter to other subsequent devices without subjecting the same to further grinding until a mill in the series is encountered treating material of an approximate size.

The classifiers are adjusted to retain and return to their proximate grinding machines such fibrous matter

as may be determined to be suitably adapted to be ground by such machine in the process and all matter of smaller sizes passes on to be acted upon by similar devices regulated at the will of the operator.

The advantages of the process are that it permits of an increased capacity of the grinding machines as it eliminates a large amount of unnecessary grinding and it allows the production of a better quality of pulp and a larger yield due to its removal from injurious grinding action as soon as reduced to a pulp.

Machine for Manufacturing Heat-Insulating Sheets from Flax Fibre.

James E. Lappen, of Le Roy, Minnesota, Patentee.—U. S. Patent No. 1,056,915.

This invention relates to apparatus for producing sheets of fibre for heat insulating purposes, the objects of the invention being to provide a machine which will effectually handle and distribute the fibre in such manner as to produce an even distribution and a proper entanglement and adhesion of the fibres with each other in the completed sheet or board and to perform the necessary steps in a continuous succession, whereby sheets or boards of an indeterminate length may be produced.

Manufacture of Acetate of Lime and Wood Alcohol.

C. W. Volney—U. S. Patent 1,052,446.

By this method it is possible to produce in one operation, a comparatively pure acetate of lime and a comparatively pure wood alcohol.

In practice, vapor of pyroligneous acid is passed through calcium carbonate held in suspension in boiling water.

The vapors arising from the water are then passed through water holding calcium hydrate in suspension and condensed.

Automatic Roll-Skinning Mechanism.

U. S. Patent No. 1,057,468. Ladislaus J. Vechinsky, Port Edwards, Wis., patentee.

This invention relates to automatic roll-skinning mechanism which, although adaptable for all manufacturing processes where a sheet of material formed on a cylinder is to be periodically removed in the form of a sheet, is particularly adaptable for removing pulp sheets formed by successive layers on a roll, wet machines.

Watermarking Apparatus for Paper Machines.

Alexander Whitton, of Mittineague, Mass., Patentee.

United States Patent No. 1,058,826.

The object of this invention is to provide means for the watermarking of paper in the process of the manufacture thereof which will do away with the requirement of dandy rolls and which is unlike certain watermarking means heretofore employed in the wet portion of a paper machine and comprising impression imparting cylinders.

PAPER-BOX MACHINE.

Friedrich Graffenberger, Milwaukee, Patentee.

United States Patent No. 1,058,858.

This invention relates to that class of paper box machines known as staying machines, by which the cut and scored box blanks are bent into the desired form and stays are applied to the corners.

The main objects of the invention are to bend the box sides inwardly at an angle to the bottom between the corners after the corner stays have been applied and the paste or glue has set sufficiently to hold them securely in place, thereby effectively avoiding the tendency of the sides to bulge outwardly when the boxes are finished, and generally to improve the construction and operation of devices for this purpose.

Paper-Strip Folding and Pressing Device for Box Machines.

Emil Jagenberg, of Dusseldorg, Germany, Patentee.

U. S. Patent No. 1,058,061.

This invention relates to improvements in such box machines, whereby the manufacture of the boxes is accelerated and the machine is rendered capable of making exactly shaped boxes of all sizes without air bubbles in the paper cover.

Paper Feeding Mechanism.

Charles D. Van Etten, of Sidney, Ohio, Patentee.

U. S. Patent No. 1,058,500.

This invention relates to paper feeding mechanism for folding machines, printing presses, and the like, and contemplates feeding successive sheets of paper from the bottom of a stack.

PAPER MADE FROM GINGER PLANTS.

By Dr. L. K. Hirshberg, A.B., M.A., M.D.

Messrs. Clayton Beadle and Henry P. Stevens have discovered that the ginger species of plants make a most valuable kind of paper. They find that transparent or crackly paper with a tin-like rattle can be produced from these growths. This paper when tested for its bursting strain often shows the remarkable resistance strength of more than one hundred pounds to the square inch. This is exceptionally high. Indeed if the testing machines were made to register above 100 pounds, there is no telling how strong this ginger paper would prove.

When this paper receives the treatment with a testing apparatus that has a plunger, long before the strain reaches the breaking point, quite a deep crater or depression is formed. This characteristic occurs only in the strongest and most powerful papers. By the application of enough tension, paper made from the ginger plant is converted into a paper of another appearance and strength. It ceases, too, to be transparent when a tension of thirty pounds per inch width of web is made. It then resembles a strong manilla cable paper.

The unstretched paper is still more peculiar and has been dubbed by Messrs. Beadle and Stevens as "hide-bound." Its ink-bearing and grease-proof qualities are not destroyed after stretching. It also meets stresses and strains in its "hide-bound" state in a most adaptable fashion.

OCEAN FALLS

(Special to the Pulp and Paper Magazine.)

Victoria, B. C., April 23, 1913.

The Ocean Falls Company, one of the largest pulp projects on the Pacific Coast is to undergo reorganization as a result of an agreement reached at a meeting of creditors and shareholders held in the offices of the company in Vancouver on Tuesday, the 9th inst. The meeting was the outcome of an application by the Crane Co., of Vancouver and Chicago, wholesale steam fitting supply merchants, for a compulsory winding-up order. Against this, a scheme of reconstruction was proposed and later accepted.

The Ocean Falls Company is the third organization to own the properties now forming the bulk of its holdings. In 1902 Robert Thompson, of Tacoma, took out water power rights and a large number of pulp leases on Cousins Inlet under the company known as the Bella Coola Pulp and Paper Company. Subsequently in 1904 this corporation assigned to the Bella Coola Development Company, and steps were taken to clear the mill site of the proposed plant. Development was slow however, and the Government's provisions governing the improvements to be undertaken by any company securing rights in this way were not met until after January, 1907, when Lester W. David, of Seattle, vice-president of the company, was instrumental in securing assignment and reorganization under the Ocean Falls Company, Limited, with a capital of $6,000,000. Mr. David left the presidency of the



company last December, when, to assist in clearing off some pressing claims, Mr. I. Hamilton Benn, of London, England, on behalf of the English interests, secured control on payment of $150,000.

The company has a pulp mill with a capacity of 150 tons of dry pulp per day, and a lumber mill with a capacity of 350,000 feet of lumber per ten hours, the mills being valued at $2,800,000 on the company's balance sheet. The concern has 80,000 acres of timber leases with 3,000,000 feet of standing timber, 250 acres of water frontage, water powers measuring 15,000 h.p., of which 12,000 h.p. is in use, a large hotel, store and houses at Ocean Falls, which are said to have cost $150,000 to build, and other assets. The principal movable assets are said to be a fleet of boats and a logging plant and equipment valued at $300,000, as well as $50,000 of bills receivable.

The capital of the company is given at 10,000 preference, and 50,000 ordinary shares of the value of $100 each. There are $2,000,000 worth of first debentures out and $1,000,000 of second debentures. The holders of these debentures came into possession of the plant on March 19th of this year.

The unsecured creditors at the present date have total claims for $320,000, the largest unsecured creditor being the Molsons Bank with a claim for $84,000. Other principal creditors are: Lester W. David, $35,000; Crane Company, $21,000; Swift Canadian Co., $13,000; R. V. Winch Co., $14,500; Empire Manufacturing Co., $9,600; McLennan, McFeely Co., $9,000; Wood Vallance Co., $9,000; Clarke Bros. & Co., $9,000; P. Burns & Co., $8,100; W. H. Malkin Co., $8,000; H. M. Mills, $6,600.

Subsequent to the application of the Crane Co. a committee of creditors, composed of Mr. W. H. Malkin, Mr. W. G. Mackenzie, of Wood, Vallance & Co., and Mr. W. Thompson, of R. V. Winch & Co., made a report on the company for the creditors

The Crane Company, through its lawyers, W. A. Macdonald, K.C., and C. S. Arnold urged the winding up of the Ocean Falls Company. The directors proposed as against this, that the company reorganize under the name of the Ocean Falls Mills Co., with a capital of $3,000,000, and that the creditors consent to accept 20 per cent. of their claims in stock in the new company and the balance in notes at 6 per cent. due in one, two and three years.

To this all the creditors with the exception of the Crane Company, the Diamond Rubber Company, of New York, creditors for $4,900, represented by Mr. L. J. Steadman, and a millwright named Leigus, with a claim for damages against the company, readily agreed. These above-named did not vote when the question was put in the meeting. It is understood that they will oppose in the courts any proposal to make the settlement binding on their clients, alleging in argument with Mr. Justice Murphy, that the section of the Companies' Act under which the settlement is made is ultra vires, and can only be dealt with under the Dominion Statutes.

Mr. David, who is at once a creditor and second heaviest holder in the company, returned to Seattle from Vancouver describing the arrangement as highly satisfactory. "Mr. Benn's offer is very fair," he said, "and I for one am perfectly satisfied.

In the proceedings Sir Hibbert Tupper, K.C., appeared for the bondholders; Mr. G. H. Head, of Davis, Marshall, Macneill & Pugh, appeared for the Ocean Falls Company, Limited; Mr. Tiffin for the G. T. P. Steamship Company, creditors for $800; Mr. H. S. Wood appeared for the Atkins Saw Company and Mr. J. W. Helliwell appeared for Mr. I. Hamilton Benn.

The Provincial directors of the company are Mr. A. B. Martin, resident managing director at Ocean Falls, and Mr. A. E. Millington, managing director of the Vancouver office.

The chief cause of the company's troubles is not generally known. The Canadian Coast market is of course very limited. and of the two thousand tons of pulp which have been produced a large proportion has been sent as samples to the United States and Japan. Prominent pulp manufacturers say that the Japanese market will readily absorb the product of at least one Canadian Coast mill. It is expected that Mr. Benn, the president, will be in Vancouver by the end of the month and full plans for reorganization and future operations will then be laid.

UNITED STATES NOTES

(Special to the Pulp and Paper Magazine.)

The Niagara Coated Paper Company, of Niagara Falls, N.Y., is notifying their customers and friends that they have appointed Mr. A. M. Huestis as their Canadian sales agent. Mr. Huestis will have his headquarters in suite No. 103, in the Mail Building, at Toronto, Ontario.

* * * *

The Northern New York Paper Manufacturers' Association is considering seriously the matter of an organized effort to induce the Canadian Railroad Commission to rescind its action which allows the new rates to go into effect on August 15. The Association members are greatly affected by the proposed increase in rates, and several of them visited New York last week to bring the matter before the American Paper and Pulp Association with a view of forming a definite plan of fighting the increase in rates of pulp wood over the Canadian roads. In speaking about the matter of preventing the increase from going into effect, F. A. Summerville, a dealer in Canadian pulp wood at Watertown, N.Y., stated last week that the only chance of getting the Commission to reverse its decision would be to introduce new evidence, as four of the five members of the Commission favored the increase.

* * * *

Among the callers on the Chicago and Middle West trade during the past couple of weeks was T. H. Watson, vice-president and managing director of the Spanish River Pulp and Paper Mills, Ltd., of Espanola, Ont. Mr. Watson was accompanied by John S. Sutherland, assistant manager of the same company.

* * * *

The Williamette Pulp and Paper Company and the Crown Columbia Paper Company, of Oregon City, Ore., will adopt the eight-hour schedule for their employees on June 1. Although the officials of the company refuse to make any statement regarding this new move, they have virtually affirmed the report. It is also reported that the wages of the workmen will not be materially cut, despite the fact that they will have much shorter hours. The pay roll of the Williamette Company, it is understood, will be increased upwards of $100,000 per year, as the result in the change in schedule, and that of the Crown Columbia Company almost half of that amount. The Williamette Company will increase its force by more than seventy-five men, and the other mill will employ at least thirty more.

* * * *

A press despatch from Grand Forks, N.D., states that the plant to be established there for the manufacture of paper pulp from flax straw will be in operation about the middle of June. A representative of the Northwestern Fibre and Paper Company was in Grand Forks last week and let the contract for building improvements, and closed a deal with the city for a daily supply of 30,000 gallons of water. It is also stated that $100,000 worth of machinery will arrive in the Western city within the next week and will be immediately installed in the new mill. North Dakota farmers are showing a keen interest in the new industry, as it opens an entirely new field of profit for them, the sale of flax straw being the channel for the new revenue. It is understood that the entire product of the concern has already been contrated for, and the company's representative declares that the market for the output is practically unlimited. If the venture proves satisfactory and the process of utilizing the straw for pulp is demonstrated to be practical, a number of mills will undoubtedly be established in that section.

* * * *

Owing to the recent floods throughout the Miami valley, the general sales office of the Lake Superior Paper Company, which are located at Dayton, O., have been temporarily removed from that city to suite 414, in the Free Press building, at Detroit, Mich. James T. Mix, manager of sales, expects to spend the greater part of his time in Detroit, and, when not there, someone will be who will be able to get in immediate touch with him.

* * * *

Chancellor Walker, sitting in the Court of Chancery at Trenton, N.J., has handed down his decision in the case of the stockholders versus directors of the Union Bag & Paper Company. A suit was instigated in January against the company by Sarah S. Aldrich, of Glens Falls, and several other directors, controlling 6,617 shares of the $27,000,000 corporation, charging mismanagement of the concern by its directors and requesting the court to issue an interlocutory injunction and the appointment of temporary receivers pending the determination of the suit. The suit was heard in Trenton on March 8, Chancellor Walker reserving his decision. Last week he notified the attorneys that in his opinion the petitioners represented a comparatively small number of the stockholders, and that irreparable injury result if receivers were appointed at this time. Upon hearing his decision, President Barrett immediately issued the following statement to the stockholders: "In the recent suit against the company, its directors and officers, which was argued on March 8, 1913, the Chancellor of the State of New Jersey has filed his decision in favor of the company. The Chancellor's opinion denies the application for a receiver and an injunction, and discharges the order to show cause. Costs in the action are assessed against the complaints. These were the only questions before the court and decisions on all were in favor of the company and its directors."

* * * *

The plant of the Escanaba Pulp & Paper Company, at Escanaba, Mich., has been down for the past several weeks on account of the damage sustained by the break in its dam No. 2, a portion of which was carried out during the high water period in the Escanaba River. The damage is estimated at about $5,000, and it will take about ten days to make sufficient repairs to resume operations.

* * * *

A water power bill, said by experts to be the most comprehensive proposition of its kind ever prepared, was presented to the Senate at Madison, Wis., on April 18, and will furnish food for discussion in the Wisconsin Legislature for some time to come. The old theory of private water power development is abandoned in the new bill, which comprises numerous new and unsuggested ideas, many of which are good and will not be fought, and many others are regarded by experienced water power men as theories impossible of realization. The bill has been long looked for and the Senate Committee empowered to draft it has given the subject exhaustive study.

Calvin C. Yates, of Norristown, Pa., who for many years has been connected with the Diamond States Fibre Company, of Pennsylvania, has taken a large financial interest in the Eaton-Dikeman Paper Company. Assisted by his son, Olin B. Yates, he will assume active charge of the management of the corporation. The manufacture of blotting paper in this mill was started twenty-three years ago by W. H. Eaton. There is no change in the present office force incident to the advent of the Yates' interest.

* * * *

The St. Regis Paper Company has completely remodeled the Herring mills at Herrings, N.Y., which they purchased a little over a year ago, and has already about doubled the working force. The sulphite mill is now running, and the ground wood pulp plant is almost ready to start up. Work is in progress on the paper mill plant, and it is expected that it will be in operation within a few months.

* * * *

Reports of the first forest fires of the season have already been received by Land Agent Viles, of the State of Maine. The fire occurred at South Thomaston, and caused a damage of about $1,000. A small forest fire near Auburn was also reported, but the damage was trifling. A meeting was recently held at the Houlton Court House at which time plans were made for fighting the forest fires during the coming summer. There were many land owners present and wardens were appointed.

* * * *

Despatches received at Kalamazoo, Mich., from Los Angeles, Cal., tell of a narrow escape from death that President Eddy, of the Three Rivers Paper Company, had when another automobile ran into the one in which he was in. Mr. Eddy, fearing that his machine would be struck, brought it to a stop. The other automobile was going at such a high rate of speed that it could not be stopped before it skidded into Mr. Eddy's machine. The fact that no one in Mr. Eddy's car was injured is considered marvelous. His auto was damaged to the extent of $500.

* * * *

Because it has been found impossible to get material for pulp, the Bear River Paper & Bag Company's mill at Petoskey has been shut down until June 1, when the "slab" period will open. The mills since opening up about a year ago, has run fairly well and enjoyed a pretty good business. George A. Fernald, the Boston banker, who is giving the company much financial assistance, states that a new company will take over the management from the receivers within a short time. Mr. Fernald has authorized the receivers to contract for as much material as possible.

* * * *

J. R. Russell will, on and after May 1, be connected with the Marathon Paper Mills Company at Rothschild, Wis., in the capacity of manager of sales.

* * * *

The Sutton Pulp and Paper Company, of Sutton, West Virginia, has just been incorporated. The new company will engage in the manufacture of pulp and paper, the plant being located at Sutton, W. Va., in Braxton County. The authorized capital of the new company is $1,000,000. The incorporators are: W. F. Morrison, Alfred Walker, William H. Lee, E. G. Rider, and C. H. Bland, all of Sutton.

* * * *

The Inland Empire Paper Company, of Spokane, Wash., whose plant is located at Milwood, will be ready to resume operations on or about July 1, according to present expectations of the members of the concern. The company is expending about $400,000 in the construction of a new three-story addition, the installation of new machinery and extensive repairs to the old equipment. Pending the completion of this work, this mill is closed down. Plans call for the installation of a 154-inch machine, a complete feeder room equipment, a waste paper conversion plant, a rag room equipment, 600 horse power boiler equipment, a 450 horse power steam engine and much repairing and alteration of the old machinery. When completed, the capacity of the plant will almost be doubled, and almost twice as many employees will be on the pay roll.

* * * *

The first paper pulp made in the State of North Dakota was produced in McCanna during the past two weeks. The North Dakota Straw Products Company, of that place, is now in active operation, and expects to turn out a large quantity of pulp daily. In speaking of the success of the first output of the company, S. McCanna, a heavy stockholder in the enterprise, stated last week that the full capacity of the mill would not be attained until next fall, when more straw is available. The pulp industry is a new one in North Dakota, and the McCanna plant is the first one to turn out the product. The company is capitalized at $75,000, and at present is handling about 60,000 tons of straw daily. From 25 to 30 per cent. of the fibre in the straw is said to be gotten out. The manufacturing process is interesting. The fibre when threshed out is crushed and worked to a pulpy state. The flax straw pulp thus produced competes with sulphite wood pulp. This quality of pulp is used in the manufacture of book and catalogue papers, etc.

* * * *

The log driving season is now in full swing in the upper part of New York State. The Aldrich Paper Company reports 15,000 cords of spruce wood floating down the west branch of the Oswegatchie River for the mill at Emeryville. When the flow reaches that place 2,000 cords will be liberated to go down the river for use at the plant at Natural Dam.—Mc.

NO OPPOSITION TO TARIFF BILL IN CONGRESS.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., April 29, 1913.

It became known here to-day that the Republican minority of the House of Representatives will offer no amendments to the paper schedule as in the new Tariff Bill. This means that there will be no opposition voiced to free print paper in the House. Many Republicans do not relish this attitude thus forced upon them by their minority leader, and ask how Republicans can be considered consistent in demanding protection for wool, sugar and other industries, while disregarding entirely the great American paper industry. Advocates of protective duties continue to point out discrepancies and inconsistencies in the new paper schedule, but thus far to no avail.

No difference, it is pointed out, is understood between pulp mechanically ground and pulp treated chemically —both being placed together without differentiation, on the free list. It is predicted by students of the paper tariff that this failure to perceive the differences between these two classes of Government prohibits absolutely the export of lumber from Crown lands, from which most of the pulp wood would come, except by certain of its own paper manufacturers, never by or

for the benefit of American manufacturers. The Underwood Bill fails entirely to grasp the situation in Canada, which has developed largely from the Taft reciprocity pact. It is pointed out by paper experts that the removal of duty on chemically treated wood pulp, bleached or unbleached, brings to light the fact that competition with Germany and the Scandinavian countries was about as close as it could be, under the duties imposed in the Payne-Aldrich tariff. There can be no American competition in this line, under the proposed free trade.

Advocates of a tariff on print paper inquire if the tariff board defenders believe that body ever would have recommended free print paper after a scientific investigation of the conditions governing the paper industry at home and abroad. Consistency, it appears, has become a stranger to Republicans, in tariff matters, as to Democrats. Representative L. W. Mott, of Oswego, N.Y., is one member of Congress who has the courage of his convictions on the paper schedule. "There are many large paper mills in my district," he says. "The paper industry in Canada has been fostered by Section 2 of the Taft Reciprocity Act, at the expense of the industry of the United States. Canada still imposes from 15 per cent. to 20 per cent. duty on paper imported from this country, and it is an unfair arrangement. Now we intend giving Canada absolute free trade with absolutely no return. We hear much of the United States having declared in favor of free trade or low tariff duties, but, judging from the popular vote polled by President Wilson, it is quite evident that the country is not so much in favor of it. The Tariff Board reported that it cost $4.00 more to produce a ton of paper in the United States than in Canada. Under the free trade provision of the pending Act, our paper mills have been obliged to halt in their improvements and developments, and the outlook is very unfavorable for them."—Meb.

TARIFF BILL PRESENTED IN FULL.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., April 22.

The Ways and Means Committee presented the Underwood Tariff Bill in the House to-day. The report was signed by fourteen Democratic members of the committee. It estimates that the first fiscal year following the passage of the bill, the receipts of the Government will be less than the disbursements by $68,790,000. To meet this deficit the income tax has been framed and it is estimated that the revenue from same will be $70,125,000.

According to the Committee's estimate, the customs revenue from the bill will be $37,896,000 less than the customs receipts from the Payne law in 1912. Among other commodities, the estimates include $2,957,000 for pulp and paper under the Underwood tariff, as against $4,886,000 under the Payne tariff. The average reduction in duties of pulp and paper amount to 21 to 11.

It is estimated the amount of dutiable importations under the bill would increase in value from $759,209,915 to $798,956,000. The average duty under the Payne law is 40.12 per cent., as against an estimated average duty under the Underwood bill of 29.60 per cent.

WIDTH OF PRINT.

New York, April 29, 1913.

The American Newspaper Publishers' Association, of this city, has just issued their bulletin No. 2873, which gives a compilation of the widths of rolls of daily newspapers received to April 1 of this year. The announcement reads:

The following compiliation from reports of daily newspapers states the widths of rolls of news print paper used by 851 daily newspapers. It has been arranged in two sequences—by States and by widths.

Prior to information about1909, the widths of rolls used by various newspapers was restricted to a few jobbers. The grouping of the widths in the lists here given is helpful to new mills regardless of jobbers.

The progress made during the past year towards standardization of widths of rolls is obvious from the following comparison:

	1910.	1911.	1912.	1913.
48 inches and under	66	66	69	82
61 to 65½ inclusive	12	9	9	7
66 inches	30	36	44	46
66¼ to 66¾ inclusive	24	28	38	48
67 inches	182	225	243	248
67¼ to 67¾ inclusive	23	19	22	23
68 inches	106	92	92	89
68¼ to 68¾ inclusive	17	14	16	14
69 to 69¾ inclusive	36	31	33	33
70 inches	137	152	160	161
70½ to 70¾ inclusive	22	21	25	26
73 to 75¾ inclusive	21	25	30	41
76 inches and above	37	39	37	33
Total	712	757	818	851

While the widths of rolls between 66 and 68 inches (inclusive) constitute numerically slightly more than half of the total list, the actual consumption of these widths constitutes 75 per cent. of the entire news print paper tonnage of the country, according to the best reports.

Aming the noticeable changes of the year were the enlargement from seven column pages to eight column pages of the Boston Post, Boston Journal, New York Times, New York Morning Telegraph, New York Press, San Antonio Light, Montreal La Patrie, and New Orleans Item.

Following this announcement the bulletin enumerates the widths of the rolls under a classification by States, and gives for each newspaper the width of the rolls in full size, three-quarter size, half size, one-quarter size, and special size.

The association also, in Bulletin 2874, enumerates the dates of expiration of paper contracts of 854 daily newspapers and the period when contracts are usually made. This compilation has been arranged in two sequences—by States, and months when new contracts are usually made. It is designed to give information to paper mills, which may desire to bid for the respective contracts.

FAVORED NATION CLAUSE WILL HOLD.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., April 29, 1913.

President Wilson does not believe Congress will repeal the favored nation clause of the tariff law under which trade conventions have heretofore been made with other countries. He declared to-day that the proposed reciprocity agreements would not, in his opinion, be in violation of the favored nation clauses in existing treaties.

PAPER STOCKS.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., April 29, 1913.

A heavy decrease in the production of news print paper, with a small decrease in stocks on hand, is the feature of the February statistics of the American Paper and Pulp Association, as filed with the Commissioner of Corporations in this city. The production was but 92 per cent. of the computed normal (full capacity). The total for the month was 94,786 tons, a decrease of 14,878 tons from January. This was largely due to the fact that there were only twenty-four working days in February, against twenty-seven in January and also to the fact that the February returns cover but fifty against fifty-one for January. The production in February, 1912, was 100,714 tons. The average daily output in February, 1913, was 3,949 tons, or 113 tons less than in January.

Shipments for the month were 95,664 tons, a decrease of 14,920 tons from January. The excess of shipments over productions caused a decrease of 840 tons in stocks.

Importations of newsprint amounted to 12,669 tons, of which 11,209 tons came in free of duty.

Other grades of paper, as a rule, showed moderate decreases in production and shipments, while stocks remained practically stationary. A good demand for these other grades was, however, reported, with the exception of writing paper.

FOREST FIRES IN UNITED STATES.

(Special to the Pulp and Paper Magazine.)

New York, April 29, 1913.

Twenty per cent. of the forest fires which the forest rangers have to fight annually are caused by campers, is the opinion of the Chief Forester in his annual report of the Forest Branch. The following tabulation showing how fires originated, also appeared in his report:

Campers	38
Railway locomotives	34
Lightning	23
Donkey engines	11
Railway construction	11
Public road construction	9
Uncontrolled permit fires	8
Smokers	7
Accidents	6
Logging railways	6
Prospectors	3
Indians	3

How many of the 188 fires of which the causes are still unknown were the result of an untended camp fire is open to surmise, but as in most of the other risks, such as railway and road construction, and logging operations, the existence of fire is at once known, the camper may be justly held to account for a very large proportion of the season's conflagrations.

Stringent regulations have been passes by the Board of Railway Commissioners of Canada to cover the risk of new railroads under construction in the province, the patrol has been doubled on the rights of way, and every possible precaution urged upon logging operations. The Forest Branch is endeavoring to co-operate in every way with those who have work to perform which is attended with danger to the forest. But the greatest danger of all—that of the man who is careless with his camp fire—still remains open, and it can be removed only by increased watchfulness on the part of every individual who uses the woods for pleasure or profit.

This year the officers of the Forest Branch expect a harder season than ever before. The very condition of dampness, and consequent heavy growth of grass and weeds, which made the year 1912 one of the best in the history of the province from the standpoint of fire protection, will combine to make a great fire hazard this spring.

The rangers now appointed by the Branch are being given particular instructions with regard to warning campers and securing their co-operation in keeping down the danger of the forest.

The six simple rules which the rangers will impress upon the campers and on all those they meet in the woods are:

(1) Be sure your match is out before you throw it away.

(2) Knock out your pipe ashes or throw your cigar or sigarette stump where there is nothing to catch fire.

(3) Don't build a camp fire any larger than is absolutely necessary. Never leave it, even for a short time, without putting it out either with water or dirt.

(4) Don't build a camp fire against a tree or log. Build a small one where you can scrape away the enedles, leaves or grass from all sides of it.

(5) Don't build bonfires. The wind may come up at any time and start a fire which you cannot control.

(6) If you discover a fire, put it out if possible; if you can't, get word of it to the nearest forest ranger or fire warden as quickly as you possibly can.—Meb.

OTTAWA NOTES.

(Special to the Pulp and Paper Magazine.)

Ottawa, April 29, 1913.

The James MacLaren Company, of Buckingham, manufacturers of lumber and pulp, are constructing a large dam on the Lievre which is expected to be completed in a few months' time and from which they expect to develop additional water power. The work has been proceeding for some months past, and it is understood that besides supplying power for the company's mills, and the surplus will be sold to power companies which supply this city. The MacLaren Company has recently added considerably to its pulp making facilities by the construction of additional grinders.

While working on a paper machine in J. R. Booth's mills A. Lecuyer, an 18-year-old workman, was instantly killed by being drawn into the machine. Lecuyer was employed as an assistant. Early last Thursday morning he crawled under his machine, put his hand on one of the rolls of paper to steady himself and had the member caught till his arm was drawn in almost to the shoulder, death occurring almost instantly from shock. "It is the first time an accident of this kind has ever occurred in this mill," said Mr. Fred Booth of the occurrence.

Sir Robert Perks, the millionaire British contractor, was in Ottawa all last week. Although Sir Robert is best known to Canadians as the tenderer for the construction of the Georgian Bay canal, he has considerable pulp interests in Canada, being a part owner of the New Brunswick Pulp and Paper Company at Millerton, on the Miramichi, which he recently inspected en route here. It is reported that this company is negotiating for the Sinclair property on the Miramichi River as a source of raw material.

Four workers in the digester pit of the Riordon Pulp and Paper Company's pulp mill at Hawkesbury were recently scalded about the arms and head as the result of a sudden escape of steam from one of the boilers. In order to get out of the pit the men had to pass the exhaust, being badly scalded in the act.

Lumber and pulpwood exporters to Great Britain state that freight rates are being raised for the present navigation season. Contracts made have been for increases on former rates. The South American trade is very dull because of the absolute scarcity of means of transport.—Mac.

EDDY GOES OUT OF PAILS.

(Special to the Pulp and Paper Magazine.)

Ottawa, April 26, 1913.

The manufacture of wooden and pulp pails will be given up by the E. B. Eddy Company of Hull, on account of the scarcity which exists at present for good timber as raw material. An official of the firm when seen in regard to the matter stated that all the good timber the firm could obtain was needed for the manufacture of matches. Galvanized iron pails of late have been fast replacing wooden pails on account of their cheapness and this is an additional reason why, when the raw material is scarce, the manufacture of the latter is to be discontinued.

The employes who have been engaged in the making of pails, some of them for over twenty-five years, have been transferred to other departments and none will lose work on this account. There is a probability that the Eddy Company will now go in for the manufacture of paper cups and containers, but this is not definite as yet.—Mac.

WHAT PREMIER FLEMING SAID IN OTTAWA.

(Special to the Pulp and Paper Magazine.)

Ottawa, April 29, 1913.

"I look to see a splendid mechanical pulp manufacturing industry built up in the Province of New Brunswick," said Premier J. K. Flemming of that province, to your correspondent, while in town last week conferring with the Dominion Government.

Premier Flemming, who also holds the post of Minister of Lands, Forests and Mines in his Cabinet, recently framed and has promulgated new regulations governing the issue of timber and pulp licenses. With a view to special encouragement for the pulp and paper industry a pulp and paper license, framed somewhat along the lines of those issued by the Ontario Government, was included and it provided for the granting of pulpwood areas on very advantageous terms as to tenure, providing that 50 per cent. of the pulp therefrom were manufactured in New Brunswick, that a pulp mill was built on the limits, etc.

"The great result which I expect to see follow these changes," said Premier FFlemming, "is the encouragement of the manufacture of mechanical pulp in New Brunswick. Hitherto we have confined our operations mainly to sulphite pulp. In the manufacture of news print, as you know, both kinds are used so that if we make the mechanical variety it should open the door for the building up of a news print industry as well. The chief essentials for mechanical pulp are the power and the raw material, and we have both."—Mac.

DONNACONA IN TROUBLE.

The construction of the Donnacona Paper Company at Donnacona, Que., has been held up by serious difficulty with the Ambursen Hydraulic Construction Company of Canada, who were building the mill and hydraulic development on a cost, plus percentage basis. The Donnacona Paper Company has broken its contract, due to the discovery that the dam would cost about double their original estimates, made by Mr. Eaton, of Watertown. It appears that insufficient borings and soundings were taken which reported rock in the river bed. On this the complete estimates were based for the mill and dam, but when construction started and borings were taken by the contractors, it was found that bed rock was very much deeper than anticipated. Owing to the difficulties in this connection the Ambursen people have pulled out their entire equipment of $30,000 worth of machinery and have entered suit for damages and breach of contract against the paper company. Reports have it that construction has been recommenced by the Donnacona people themselves and that a crib dam will be erected on the soft bottom and the development proceeded with in that manner. A further report from Montreal states that the Canadian Northern Railway had objected to this crib dam, since they have a bridge immediately below the dam. There is also a highway bridge and it is feared that these interests will oppose such a scheme of development, which they consider dangerous to their property. Doubtless the opening of the mill will be delayed for some time, until these matters are adjusted and the finances straightened out. Mr. Geo. H. McKee, formerly of the Hinckley Fibre Company, Hinckley, N.Y., and also of the Baie St. Paul Lumber Company, is the general manager. These limits and powers were purchased from John Forman, of Montreal, for a very high figure.

DRYDEN HOLDS ITS ANNUAL MEETING.

The annual meeting of the Dryden Timber & Power Company was held on Monday, April 14th, at the Queen's Hotel, Toronto. The report of the directors was adopted and the directors were elected for the ensuing year.

This company is the latest addition to the many pulp and paper companies now successfully operating in Canada. Situated as it is on the Wabigoon River on the main line of the C.P.R. midway between Fort William and Winnipeg, the company will be in an advantageous position to supply the ever increasing demand of the Western market. This is a sulphate plant, its capacity being about 40 tons per day of dry pulp or paper in the shape of sheathing or heavy kraft wrapping paper.

The shareholders approved of a new issue of half a million preferred stock, which will be issued as may be required during the year to provide for certain desirable additions to the plant.

The following were elected as the Board of Directors for the ensuing year: Messrs. D. L. Mather, James Turnbull and H. B. Shaw, of Winnipeg; T. Willes Chitty and Francis Gibbs, of London, England; F. Perry, Montreal; Sam. Nesbitt, M.P.P., Brighton, Ont.; E. W. Bonfield, Dryden, Ont., and Geo. A. Kingston, Toronto.

At a directors' meeting subsequently held, Mr. Mather was elected president, and Mr. Bonfield vice-president and managing director.

NEWFOUNDLAND NOTES.

(Special to the Pulp and Paper Magazine.)

The new pulp mill about to be erected on the banks of the Gander River, will be managed by Mr. F. C. Gillette. A branch railway from the main trunk to the mill a distance of 2½ miles has been constructed. The mills which will make mechanical pulp entirely, will have a capacity of 70 tons a day. Construction work will be pushed rapidly forward.

Finance Minister Cashin's Budget just presented to Parliament estimates value exports of pulp and paper for the year from July 1, 1912, to June 30, 1913, to reach $3,000,000. For the six months ending December 31, 1912, there were 29,107 tons of paper exported, valued at $1,304,032; and 40,144 tons of pulp, valued at $352,824, making a total value of $1,656,856, being $94,051 worth more than of the whole of the previous twelve months.

Since the commencement of the manufacture of pulp and paper in Newfoundland, four years ago, we have exported 90,615 tons of paper, valued at $4,059,499; and 110,376 tons of pulp, valued at $1,034,185, making a grand total of $5,093,684. This does not cover the whole product of this industry, as many of our local newspapers are now using the locally manufactured newsprint.

P. Ytter, for a number of years manager of the Humber River Pulp and Lumber Company, operating at Deer Lake, has been appointed manager of the new concern about to erect pulp mills at the foot of Deer Lake, and which obtained water power concessions from the Legislature during last session.

The Grand Falls mills are going to install additional machinery for the manufacture of higher grades of paper.

The Albert Reed Co., operating at Bishop Falls, and at present manufacturing only pulp, are going to put in paper making machines.

Large quantities of pulp and paper are now stored at Botwoodville awaiting opening of navigation on the Exploits River, when it will be shipped to England.

The Horwood Lumber Co. hope to start the manufacture of pulp early the coming season. Some of the machinery of their mill has already been installed.

POWELL RIVER PAPER CO., LIMITED.

At an extraordinary general meeting of the shareholders of the above named company in Vancouver on the 10th of April, 1913, the following resolution was passed: That this company be voluntarily wound-up under the provisions of the "Companies' Act of 1910," and amending Acts, and that H. K. Brooks, in the City of Vancouver, Province of British Columbia, be appointed liquidator of the company.

Notice is also given that all persons having any claims against the Powell River Paper Company, Limited, are directed to send same to the above liquidator.

BIG MILL FOR HAWKESBURY.

A new box board mill is to be built at Hawkesbury immediately by Ottawa and Montreal interests. The immediate installation will consist of an 8 cylinder board machine, 136 inches wide, to be followed almost immediately by a combination Harper machine. They will use the screenings from Riordon's mill and from other mills in that vicinity and buy pulp for the liners.

ALLIS-CHALMERS-BULLOCK, LIMITED.

Mr. Frederick Nicholls, president of the Canadian General Electric Company, has announced that negotiations have been concluded with the Allis-Chalmers Company of Milwaukee, and the Allis-Chalmers-Bullock Company of Montreal, resulting in the acquirement by the Canadian General Electric Company of all the properties and assets of the Allis-Chalmers-Bullock Company in Canada, as well as an agreement with the Milwaukee Company which gives the Canadian General Electric Company the exclusive right to manufacture and sell in Canada the types of apparatus for which the Allis-Chalmers Company have achieved a world-wide reputation.

The business will be conducted under the name of Canadian Allis-Chalmers, Limited, a charter having been applied for, and Mr. Milne, manager of the Allis-Chalmers-Bullock Company will continue as manager of the new company. The Canadian General Electric Company, with its subsidiary companies, the Canada Foundry Company and the Canadian Allis-Chalmers are now in a position to completely build and equip any industrial enterprise, as they manufacture the structural steel required for the buildings, Corliss engines, steam turbines or water wheels for the motive power; boilers, pumps, electric cranes, and everything else required for the equipment; and saw mill machinery, flour mill machinery, mining or cement machinery for operation. These lines, of course, are in addition to their output of every kind of electrical machinery and supplies, etc.

A NEW PULP MILL PROJECT.

The Chesapeake Pulp & Paper Co., of West Point, Va., it is aid will have the first sulphate pulp mill in the United States built entirely by an American engineer with modern American methods of design and construction. This mill is now being built by George F. Hardy, New York.

LEGIBILITY OF COLORED LETTERS.

Many experiments have been made in Germany with a view to deciding the legibility of colored letters on colored papers, the distance, size and form of letters, and all other conditions being the same. The result has been that the following list of order of legibility has been worked out, the most legible first:—

Black letters on yellow paper.
Green letters on white paper.
Red letters on white paper.
Blue letters on white paper.
White letters on blue paper.
Black letters on white paper.
Yellow letters on black paper.
White letters on red paper.
White letters on green paper.
White letters on black paper.
Red letters on yellow paper.
Green letters on red paper.
Red letters on green paper.

The sulphite mill which has so frequently been rumored in connection with Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, is now under preparation. Operations are expected to commence during the summer.

OCEAN FALLS NOT YET SETTLED

(Special to the Pulp and Paper Magazine.)

Vancouver, B. C., April 18.

With some of its creditors demanding a compulsory winding-up of the company, with the debenture holders advertising a sale of its assets, and with the company's efforts to reorganize tied up by legal complications, the affairs of the Ocean Falls Co., Limited, are now completely tied up. At present there are applications before the Supreme Court of British Columbia on the part of a minority of the shareholders to compel a winding up of the company; another application on the part of the majority of the creditors to make the decision of the majority to accept a settlement binding on the minority, and a third application to have the proposed sale of the company's assets and its entire debenture issue of $3,500,000 declared invalid. Each of the applications is opposed and a long legal fight is apparently ahead of the company, one question of law involved attacking the constitutionality of the B. C. Companies Act, which will not likely be considered settled until the Privy Council has passed upon the point.

The company whose flotation with a capital of $6,000,000 in October, 1909, is a matter of current information, has been in financial difficulties for some time. Last October the English shareholders put up a sum of $150,000 to get control of the company, applying a part of the sum to satisfy the creditors, but on March 19 of this year, the debenture holders took possession, and advertised a sale of the company's assets under a debenture holders' trust deed entered into by the directors in January, 1910, to secure two issues of debentures totalling $3,500,000.

The total unsecured creditors is given in a statement issued by the company at $320,000, of which Molson's Bank with a claim for $94,000 is the largest single creditor. Mr. Lester David, who was prominent in the organization of the company is a creditor for $35,000. The other creditors are chiefly wholesale grocery merchants and building supply men.

Under a scheme of re-organization put forward by the company at a meeting of creditors, it has been proposed to reorganize under the name of the Ocean Falls Mills Co., with a capital of $3,000,000, cutting the share capital of the company in half. The present issue consists of 10,000 preference and 50,000 common shares of the value of $100 each. The proposal to the shareholders is to substitute one share of the new company's stock for every two shares of the old stock; the proposal to the creditors is to pay 20 per cent. in stock in the new company, and the balance in 6 per cent. notes payable in one, two, and three years.

At the recent meeting of creditors held in Vancouver all the local creditors favored the scheme of reorganization, but the attorneys for the Crane Co., of Chicago, creditors for $21,000, the Diamond Rubber Co., of New York, creditors for $4,500, and a few of the other United States creditors declined to vote. Their instructions are to press for a winding up of the company. A motion is before the courts under a clause of the B. C. Companies Act to make the decision of the majority binding on the minority. In the meantime the debenture holders have been advertising a sale of the company's assets, but an application for an injunction is now before the Supreme Court to prohbit the sale. It is contended that the articles of incorporation filed at Victoria with the Registrar of Joint Stock Companies fails to disclose the names of the directors, and that therefore any proceedings passed by the board of directors are invalid. This is an indirect attack on the debenture holders trust deed, which if upheld by the courts would leave the debenture holders without any security, and in the position of ordinary unsecured creditors. An imposing array of legal talent has been retained for the court proceedings which promise to be lengthy. In the meantime the receiver for the debenture holders has been instructed by the court to withhold the advertised sale until the question of the legality of the trust deed is decided.

The assets of the company include the townsite at Ocean Falls, B. C., with a pulp mill, timber mill, hotel and buildings. The pulp mill has a capacity of 150 tons of dry pulp per day, and the lumber mill a capacity of 350,000 feet per shift of ten hours. The company has a water power of 15,000 h.p., of which 12,000 h.p., is in use, and a fleet of three vessels. The logs, lumber and pulp at the mill is stated to be worth $300,000. Two pulp leases covering over 80,000 acres, with three billion feet of standing timber on it are held by the company on a rental of $1,600 per year for 21 years from January, 1907.

To a representative of the Pulp and Paper Magazine who called on Mr. A. E. Millington, the resident managing director at Vancouver, that official expressed his inability to speak of the future plans of the company. "Until the lawyers get through, we scarcely can tell where we are at. Our plans for reorganization must come to a standstill, and after we decide on a policy it will take from sixty to ninety days to get the plant started again."

"Has the company found the markets for lumber and paper satisfactory?" asked your representative.

"Yes, the trouble is not with the markets. Our trouble has been in not being able as yet to get our plant in full working order. Our machines are not yet all installed, and in regard to the pulp department we have been handicapped in the market by our inability to accept contracts with time clauses for delivery attached."

"It is not then that the paper industry in British Columbia is unsatisfactory?"

"No, the industry is all right, and we will have no cause for complaint when we are able to enter the market with our full equipment in operation," said Mr. Millington, who, however, declined at the present stage of the company's affairs to discuss the plans and prospects of the company. "We can do nothing and plan nothing until we are through with the lawyers, and find out if the reorganization scheme goes through," he added.

Mr. J. Hamilton Benn, M.P., of England, a representative of the English shareholders is now on his way to the Coast to confer with the resident directors as to the future of the company.—J. S. C.

PULP AND PAPER NEWS

Toronto has a report that Spanish River common stock will go on a dividend basis in June.

A Chatham special says the Miramichi Pulp Mill property has been sold to A. E. Read, of London, owner of the Dominion pulp mill at St. John, N.B.

Some of the American interests of the Ouiatchouan Falls Pulp and Paper Company stated that the company was going ahead with the installation of new grinders, with the object of increasing the capacity of the mills by 40 dry tons daily.

The Sherbrooke Machinery Co., of Sherbrooke, Que., have just made a shipment of ten ground wood thickeners, of their well-known battery design, and equipped with special conveyors. The shipment also included three sulphite thickeners of battery design as well.

The Riordon Pulp and Paper Company, Limited, are erecting a magnificent office and laboratory building at Hawkesbury. It is being designed by Ross and McDonald, of Montreal, and is expected to be one of the finest pulp and paper mill office buildings in Canada.

The Ratcliffe Paper Company, of Toronto, has entered suit for damages of $20,000 against the Spanish River Pulp and Paper Company for alleged breach of contract. It is alleged that the defendant company agreed to deliver certain quantities of Manila in September last which complainant did not receive. The case will receive an early hearing.

Owing to the flood at Dayton, Ohio, the Lake Superior Paper Company has opened a temporary office at 414 Free Press Building, Detroit, Mich., James T. Mix, manager of sales, will spend a good portion of his time at the new office. Mr. Mix has moved his family to Chicago. His home in Dayton was so seriously damaged that he was compelled to leave it.

The Minnesota and Ontario Power Co. is now producing 225 tons of news per day at the mills, International Falls, Minn., while the proposed new mills at Fort Frances, Ontario, will, it is estimated, produce 125 tons per day, at the latter part of the year. The same company are about to build a 50-ton kraft mill and a 50-ton soda plant at an expenditure of $2,500,000.

The Belgo-Canadian Paper Company, at Shawinigan Falls, expects to commence work on a sulphite plant as soon as the frost is out of the ground. The company at present has no sulphite plant, but has been purchasing its supplies at Grand Mere and Hawkesbury. F. H. Biermans, the managing director of the company, has just returned from Europe.

The first of the two machines added to the equipment of the Spanish River Pulp and Paper Company will be in operation next month, increasing the output by 28 to 30 tons a day. When the second machine is completed the company will have a production of from 155 to 160 tons a day. Nearly all the output has been disposed of on contracts made in January. The allied plant at Sturgeon Falls is now in full swing.

J. E. A. Dubuc, the president of the Chicoutimi Pulp Company, has just returned from a trip to Europe. He states that the European money market is extremely tight, but that, notwithstanding, his company is going ahead with the developments at Chicoutimi. One new building is being erected, and another remodelled, and he expects the mills to be running at full capacity by the middle of this month. The bulk of the increased output will go to Europe.

The Journal Printing Company, of Ottawa, is erecting one of the most up-to-date newspaper buildings in America. It will be eight storeys in height, and the sides and roof will be constructed almost wholly of glass. The building will be ready for occupation by November 1. The Journal added another mammoth new press to its equipment last year and when located in its new quarters will be one of the best equipped daily papers on the continent.

The paper jobbers of Toronto have arranged a uniform system of discounts, which will obviate innumerable difficulties of the past. In future the discount will be 2 per cent. off for ten days, or 60 days net. Hitherto each firm has used its own system of discounts, which resulted in a useless conflict of prices. The arrangement applies only to Toronto firms and their customers. It does not apply, however, to paper bags, which are still cut to all sorts of diminutive quotations.

The securities of Smart-Woods, Limited, just listed should offer some attractions as a business man's investment. The industry is particularly well established; is under excellent executive and managerial control, and enjoys a broad market for its product. The statement presented to the Stock Exchange represents a very strong position, despite an unusually drastic "writing down" of the principal assets, which we believe has been the conservative policy of the board.—Financial Times.

Manufacturers and those interested in pulp in British Columbia are not very sanguine over the outlook, due, they feel, to the limited market which prevails in that vicinity. It is expected, however, that the new Japanese treaty will assist mills there, although they do not figure that that will account for the consumption of more than one or two good mills. The President of the British Columbia Sulphite Company, Vancouver, feels that it is not beyond a possibility that the manufacture of high grade sulphite paper would be a good thing in British Columbia. The Panama Canal has not aroused very much enthusiasm as they do not feel there is much field in that vicinity.

The plant of the Riordon Pulp & Paper Company, at Merritton, Ont., which was visited by fire a few weeks ago, will again be in operation by June 1. It is being rebuilt in a very thorough manner and new chip bins and screens of the most modern type, as well as other improvements are being installed. The paper mill at Merritton was not injured by the fire and has been running uninterruptedly manufacturing news print, hanging and building papers. It is the intention of the company this fall to install two additional 12½-ton digesters at Hawkesbury, when the capacity of the plant will be 45,000 tons annually. The mill will be maintained on the most efficient and up to date lines of any chemical pulp plant in the country.

The decision to increase the Toronto Paper dividend from 5 to 8 per cent. recently came when for the seven months ending the new fiscal year ended March 31 the statement showed profits for the period of $80,973.

which would be at the rate of $138,500 for a full year. After deducting bond interest the earnings are approximately 14½ per cent. on the capital stock. While the company is one of the oldest manufacturers of high grade paper in Canada, the present interests have been in control only since last summer. Net profits for the seven months period were at the rate of a 50 per cent. increase. When the company was acquired by Mr. Garnet P. Grant, president of the Dominion Bond Company, and his associates last summer, the stock under the re-organization of finances then effected was underwritten at 55. The stock has advanced about twenty points since the announcement.

The Beaver Company, Limited, of Thorold, Ont., of the Canadian Beaver Companies, are just breaking ground for a mill and factory at Thorold, Ont., for the production of timber and the manufacture of Beaver Board. The plant will cost between three and four hundred thousand dollars and will represent in every detail the highest type of construction. A contract for the first unit of power has been closed. It provides for 2,800 horsepower to be used continually night and day for thirty years. Later a total of 6,000 horsepower will be required in addition to a 500 horsepower which will be used for the treatment of fibre. Materials of every nature for the construction of a plant of this kind will be required. Supply houses should immediately get in touch with the Beaver Company, Limited, Thorold, Ont.

The Pulp and Paper Magazine regrets to announce the death of Mrs. J. McDowall Grosart, of Chicoutimi, wife of the manager of the logging department of Price Brothers Kenogami paper mills, and the logging and saw mill of the Jonquiere Pulp Co., which occurred at Chicoutimi West on Sunday the 6th inst. The pallbearers were William Price, Esq., Quebec, president and general manager of Price Brothers & Co., Limited; J. M. McCarthy, Esq., C.E., director and assistant general manager of Price Brothers & Co., Limited; Alex. Blair, collector of Customs, Chicoutimi; E. F. Fluhmann Esq., M.D., of Kenogami. Representatives of the different establishments and departments of Price Brothers & Co., the Jonquiere Pulp Co., the Chicoutimi Pulp Co., as well as the whole staff of their Chicoutimi branch assisted at the funeral.

The Western Paper Mills, Limited, of Vancouver, B. C., is sending the following circular to its creditors: "The directors of the Western Paper Mills, Ltd., very much regret that, on account of being unable at this time to obtain sufficient financial assistance to continue operations, they have been forced, for the protection of all concerned, to place the business in the hands of a receiver through the trustees of the bondholders. The receiver will continue running the mill, and a reorganization of the company will be taken in hand at once. It is intended that payment in full of all liabilities will be a principle of any reorganization scheme, and, therefore, the directors hope at an early date that your account will be paid. The directors will be glad if you would forward a statement of your account to date, to the Receiver Manager, Western Paper Mills, Limited, Sapperton, New Westminster, so that it may be checked with the books of the company."—J. F. Garvin, Secretary.

As the increasing demand for paper towels and napkins becomes more and more broadcast, the manufacturers, realizing the success of this new field in the paper industry, are putting forth extra efforts to meet the needs of the consumers by adding new grades to their already large stock. Many of the restaurants have successfully adopted the use of these napkins, and towels are being utilized more than ever in schools, hotels and various public places as well as in private homes. Where sanitary conditions prevail the use of paper towels and napkins are found to be far superior to that of linen, and the cost is much less, as it does away entirely with laundry bills. The Continental Paper Bag Company is now making a new towel made from clean spruce wood, absolutely free from all injurious chemicals, which is found to be sanitary, clean and absorbent, and should be used like a blotter. Napo-lin is the name of a new paper napkin which has just been put on the market by this company. It is specially recommended for its softness, and will undoubtedly meet with general approval and find ready sale.

QUEBEC IS CONSERVING ITS WATERS.

Great credit should be given the Province of Quebec for the steps it is taking for better conserving its waters. This policy was initiated about a year ago by creation of the Running Waters Commission, consisting of three members, for the purpose of making regulations on the disposal, flow, storage and conservation of the running waters and to encourage and facilitate the utilization of the water powers in the Province.

The Commission's first report which has lately been published, gives a summary of its studies and recommendations and sets forth its views with regard to the necessity of controlling stream flow, the harmful effects of deforestration and the possibilities of water storage.

Several hearings were held by the Commission in connection with its work, one regarding the L'Assomption river with a view to interesting the power owners in a water storage project; and another regarding spring floods of the Chaudiere river. A delegation from the municipalities near Maddington fall was also heard regarding difficulties in connection with the prompt development of this water power.

A very thorough study was made of a storage system for the St. Maurice river, engineers were sent out to make the necessary surveys and the result of their investigations is of great interest. The present minimum flow of 0.38 second feet per square mile could be raised to 1.11 second-feet by adopting the proposed regulation system; and, by the regulated flow and storage dams, the water power available on the St. Maurice would be increased from 361,320 h.p. as it is at present, to 1,055,652 h.p., an increase of 694,332 h.p.

Under recommendations on the need of accurate data the report deplores the lack of information available on stream flow as, at present, such data exist only in a few instances. It urges the importance of establishing gauging stations at once on all the principal rivers. The Commission also recommends a complete inventory of all utilized water powers, this to be supplemented by an accurate inventory of the water powers not yet utilized.

The Department of Lands and Forests is also pursuing the investigation of the water powers of the Province, and the recent issue of the annual report of this department includes the results of surveys of the Mistassini and Muskosibi (Mistassibi) rivers where discharges have been taken and heights of the different falls measured.

THE MARKETS

TORONTO MARKETS.

Little activity has been experienced during the past week, due to hesitation in connection with the American tariffs. Ground wood will undoubtedly be higher, owing to the scarcity of water and wood in the United States. Present price is greatly stiffening. The sulphite market is absolutely bare, it being impossible to secure any even on the most favorable terms. Lumber is jumping up rapidly and many firms are refusing to sell on any terms. Reduced cut and the stiffening of the lumber market has affected wood to a wonderful extent and it is predicted that even the present stiff price will be very much increased in a short time. The sawing has opened and the drives are coming down, but it is not expected that this will lower the prices to any appreciable extent. Box board is very scarce and prices are jumping very rapidly. Chip board has declined slightly, but it will doubtless stiffen again, due to the scarcity of box board. The price of rags continues to stiffen.

Quotations, f.o.b. Toronto, are:

Paper.

News (rolls) $43 to $45, according to quantity.
News (sheet) $45 to $50, according to quantity.
Book papers (carload) No. 3 4.10 to 4.50c
Book paper (broken lots) No. 3, 4¼c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2 5c to 5½c.
Book papers (carload) No. 1, 5c. to 6¼c.
Book papers (broken lots) No. 1 5½c to 6¾c.
Writings 4½c. to 7½c.
Sulphite Bond, 6½c. to 8½c.
Fibre, 3c to 4c.
Manila, B., 2½c to 3c.
Manila No. 2 2.85c to 3.50c.
Manila, No 1 3c to 4c.
Kraft, 4c. to 4¾c.

Pulp.

Ground wood (at mill), $15 to $16.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $48 to $49, delivered in United States.
Sulphite (bleached), $60, delivered in Canada.
Sulphite (bleached), $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.60.
No. 1 Mixed Shavings, 60c.
White blanks, 85c.
Ordinary Ledger Stock, $1.20.
Heavy Ledger Stock, $1.50.
No. 1 book stock, 90c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.15.
No. 1 print manillas, 60c.
Folded news, 47½c.
Over issues, 55c.
No. 1 clean mixed paper, 40c. to 42½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.40 to $1.50.
No. 1 white shirt cuttings, $5.50.
Fancy shirt cuttings, $4.20.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $4.65.
Ordinary satinets, 87½c.
Floc. satinets, 97½c.

MONTREAL MARKETS.

Montreal, April 30, 1913.

No important changes are to be noted in connection with prices from those previously quoted. The outstanding feature is the absolute scarcity of sulphite, which cannot be procured at all, even at higher prices. News remains about steady with a strong undertone, while ground wood is showing a tendency to advance in price. The demand for wrapping paper and bags is very good, and there are no changes in prices for these. It is stated here that in Toronto, there has been some price cutting in both bags and wrappings, but prices here have not been altered in any sense. The demand is good, and from present indications will remain good. Altogether the tone underlying the market for all grades of paper is satisfactory.

Paper.

News, $41 to $43, delivered in United States.
News, $41 to $42 for large orders, $44 to $45 for small orders.
Newsprint, sheet, $46 to $50 at mill.
Book papers, carload lots, No. 3, 4¼c. to 4½c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manilla B., 3¼c. to 3¾c.
Broken lots, No. 2, 5¼c. to 5½c.
Carload lots, No. 1, 5½c. to 6¼c.
Broken lots, No. 1, 6¼c. to 6¾c.

Wrappings.

Fibre, 4c to 4¼c.
No. 2 Manilla, 3¾c. to 4c.
No. 1 Manilla, 3½c. to 4½c.
Kraft, 4½c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.80 to $1.85.
No. 1 soft white shavings, $1.65 to $1.75.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50c. to 55c.
White blanks, 85c. to 90c.
Ledger, $1.15 to $1.20.
No. 1 book stock, 90c.
No. 2 book stock, 45c. to 55c.
Manila envelope cuttings, $1.05 to $1.10.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 55c. to 60c.
Crushed news, 45c. to 50c.

Crushed news—

Good mixed paper, 40c. to 42½c.
Old white cotton, $2.60 to $2.75.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $2 to $2.50.
Blue overall cuttings, $3.45 to $3.55.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.55 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.60 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.50.
New light flannelettes, $3.75 to $4.25.
Flock satinents roofing stock, $1.00.

NEW YORK MARKETS.

(Special to the Pulp and Paper Magazine.)

New York, April 29th, 1913.

The local sulphite market, outside of regular contract business, now reflects a very quiet appearance. Buyers do not appear to be in the market for any more supplies than actually needed, and they are, in almost every instance, holding off and awaiting the decision of Congress in regard to the new Tariff Bill which was presented to the House early in the month. Just what the outcome of this Bill will be, cannot yet be said, but it is the consensus of opinion that it will be passed, and consumers of all grades of sulphites and sulphates are of the opinion that they will eventually be able to obtain better prices. This, however, is not the opinions of the importers, who say that even now they are receiving advanced figures for forward deliveries, and their advice to the mills is to cover as soon as possible. Reports from abroad indicate that supplies uncontracted for are very limited and makers are undisposed to contract for their remaining 1913 and 1914 output without a substantial increase over the present figures. There are very few local importers who have anything to sell and the entire sulphite market reflects an exceptionally strong tone. Domestic grades are equally strong. Makers in this country claim that their output for the remainder of the year and the greater part of 1914 is pretty well contracted for. In sympathy for the foreign grades, quotations for domestic lines are high and firm, and the outlook is that values will go to even higher levels.

The ground wood pulp market reflects little, if any, change since last reported on. There is plenty of water in the streams and mills grinding pulp for their own use, as well as those grinding pulp for sale, are enabled to keep their machines running on a good percentage basis. In consequence there is a sufficient supply on hand to keep the mills on hand for some time to come. In discussing the situation to-day, a leading dealer in ground wood pulp stated to your correspondent that the present situation could not be of long duration and that he expected to see a great scarcity of pulp during the coming summer months, on account of the early passing of the snows and the limited amount of pulp wood in hand. It is the consensus of opinion among local interest that the mills will experience an exceptionally hard siege of low water this summer, in which event pulp makers will be unable to keep their machines run ning. Though the supply of surplus on hand at present is quite heavy, it is not thought that it is sufficient to go through the summer. The outlook, therefore, for the summer is that ground wood pulp will be in very strong demand.

With the bare exception of common and mixed papers, all grades of old waste papers are passing freely into consuming channels. The recent floods out west, the strikes at several of the mills in the east and the burning of one of the plants of the largest consumers of these grades, have taken quite a little of the market, and in consequence there has been a break in these grades. Other descriptions, however, ar moving as rapidly as they can be packed, and in many instances local packers are taxed in filling their orders. Collections are coming in freely, but not in sufficient amounts to cause any accumulations, and in consequence prices are being maintained on a very strong basis.

Pulp.

Ground wood, No. 1, $16 per short ton, f.o.b. mill.
Ground wood, No. 2, $14 per short ton, f.o.b. mill.
Unbleached sulphite, domestic, $2.15 to $2.30 delivered.
Bleached sulphite, domestic, $3 to $3.15, delivered.
Unbleached sulphite, imported, $2.05 to $2.30, ex dock, N.Y.
Bleached sulphite, imported, $3 to $3.25, ex dock, N.Y.
Bleached sulphate, imported, $2.60 to $3, ex dock, N.Y.
Unbleached sulphate, $1.90 to $2.10, ex dock, N.Y.
Bleached soda pulp, domestic, $2.20 to $2.35, delivered.
Kraft pulp, imported, $2 to $2.20, ex dock, N.Y.

Paper.

Though there is a liberal movement in all grades of paper, there is a decided slackening off in the demand for the different dscriptions in some quarters. This is due partially to the pending change in the tariff, partially to the recent floods that devasted different quarters of the paper-making industry, and partially to the fast approaching summer months. Nevertheless the volume of business now being transacted continues large in the aggregate, and though there is a eeling o uncertainty as to the future, manufacturers express hopful views and are inclined to be optimistic and bullish in their ideas. Business in paper lines fell decidedly short last month, if compared with the corresponding period of last year and the year before. The disposition now of the jobbers is to place orders in a more conservative manner and trading at present is confined chiefly to withdrawals on old contracts and the placing of business for actual immediate needs only. News continues to be the subject of competition, and though manufacturers appear firm in their quotations of 2.10 cents, f.o.b. mill, it is the opinion of many that these prices can be shaded considerably on actual business. Side run news is very scarce at present and prices are being firmly maintained at 2.15 cents. Manilas, Fibres and Krafts are moving slowly, but firmly, makers of the latter item still being some weeks behind in their orders. All grades of tissues are holding their own so far as price is concerned, but the volume of business being transacted is very light. Paper board i sin quite active demand in all descriptions, and under this influence prices are being well maintained. Writings, bonds and ledgers reflect a seasonable tone and the amount of business passing compares favorably with corresponding periods of preceding years. Quotations throughout the list are without change, and are repeated, as follows:

News, rolls, transient business, $2 to $2.10, f.o.b. mill.
News, rolls, contract renewals, $2 to $2.05, f.o.b. mill.
News, sheet, $2.15 to $2.25, f.o.b. mill.
Book papers, car lots, C. & S. C., $4 to $4.20 f.o.b. mill.
Book papers, car lots ,M.F.S., $3.75 to $3.90, f.o.b. mill
Writing paper ,superfine, 11c to 13c, delivered east of the Mississippi River
Writing paper, extra fine, 10½c, delivered east of the Mississippi River.
Writing paper, No. 1 fine, 9c, delivered east of the Mississippi River.
Writing paper, No. 2 fine, 8c, delivered east of the Mississippi River.
Writing paper, engine sized, 4½c. to 8c, delivered east of the Mississippi River.
Bond paper, 6c to 24c, delivered east of Mississippi River.
Linen paper, 7c to 18c, delivered east of Mississippi River.
Ledger paper, 8c to 30c, delivered east of Mississippi River.
Manila, jute, 4¼c to 5c, delivered.
Manila, wood, $2.40 to $2.80, delivered.
Kraft, No. 1, $3.65 to $4.02½, f.o.b. mill.
Kraft, No. 2, $3.10 to 3.77½, f.o.b. mill.
Screenings, $1.75 to $2.25, delivered.
Boxboards, news, $31 to $33 per ton, delivered.
Boxboards, chip, $30 to $32 per ton, delivered.
Boxboards, straw, $32 per ton, delivered.
Wood pulp board, $42.50 to $45 per ton, delivered.
Tissue, white, cylinder, 42½c to 45c, delivered.
Tissue, fourdrinier, 45c to 50c, delivered.
Tissue, jute manila, 50c to 55c, delivered.

Meb.

The York Publishing Co., incorporated, with Ontario charter for $50,000. H. H. Shaver, Toronto.

SCANDANAVIAN MARKETS.

(Special to the Pulp and Paper Magazine.)

New York, April 29th, 1913.

In discussing conditions in Scandinavia, a correspondent from London writes :

The agents all agree that business is very quiet indeed in regard to cellulose. It may incidentally be remarked that at the momnt there is quite a glut of mechanical pulp in Scandinavia, and agents are quite open to accept Kr. 32 (Long Ton $8.58—Short Ton $7.66), f.o.b. The threatened famine in mechanical has thus been disposed of.

At a recent meeting of the Swedish Cellulose Association it was officially stated that 88 per cent of Swedish sulphite pulp is firmly sold for 1913, and about 75 per cent of the production for 1914 is booked. Then I understand there came a considerable drop as regards the amount disposed of, and there appears to be a fair proportion of unsold for 1915 forward. It is not possible to say exactly how much 1915 output has been actually sold, but a Swedish correspondent puts it at 60 per cent., although the proportion is probably not so large. At the moment, the printing trade of England seems to be rather under a cloud, and orders for printings and fine papers generally are rather difficult to get, and the efforts made by a section of the Paper-Makers' Association to obtain a uniform increase of 10 per cent. on 1912 prices have failed. The price to-day in London of news and printings is substantially what it was a year ago; and possibly news for big contracts is a shade cheaper. This is having some effect on the paper mills, which are not working at high pressure as they have been doing. The Swedish Association estimate sprices c.i.f. British ports as given below:

Strong sulphite, £8 10s. to £9.
Bleaching sulphite, £9 to £9 5s.
Bleaching sulphite (superior), £9 5s. to £9 10s.
Unbleached soda (kraft), £8 7s. 6d. to £8 15s.
Unbleached soda (easy bleaching), £8 15s. to £9 5s.
Bleached sulphite (superior), £14.
Bleached sulphite (ordinary), £13.
Bleached sulphite (second quality), £12.

All per ton of 2,240 lbs.

Long Ton.	Short Ton.
$41.44—$43.88	$37.00—$39.18
43.88— 45.09	39.18— 40.26
45.09— 46.31	40.26— 41.35
40.83— 42.66	36.90— 38.09
42.66— 45.09	38.09— 40.26
68.25	60.94
63.38	36.50
58.50	52.23

Meb.

THE BRITISH MARKETS.

(Special to the Pulp and Paper Magazine.)

London, April 26th, 1913.

At the time of writing the output of paper in the north of England is affected by labor troubles and, consequently, mills supplying on contract, unless they have large stocks, find the position of affairs very awkward, indeed. Up to the end of March nearly every mill in the Kingdom was working at a good capacity and the Government returns show a considerable increase in the export trade, particularly in Australia, Canada and the British Colonies in general. The demand for news printings in the British markets is fair, whilst kraft and wrappings meet with a steady request. Should there be a deadlock in the northern industry, Canadian Kraft and "news" may stand a good chance in holding manufacturers over their difficulties, but the prices must be reasonable. In most cases recently paper makers getting a slight increase on their quotations, but competition is so keen and the "undercutting" so great in their efforts to meet it, the profit as regards increases to meet the cost of production, is no much to boast of. Recently the Government paper departments gave out a fair share of orders to mills in all parts of the country, and, beyond the labor unrest since the beginning of April, it may be conceded that the British paper indutsry is in a good position with orders on hand and the output steadily increasing.

The mechanical pulp market presents no special features at the moment. Everything is in the buyers favor, business is somewhat dull and the great maority of the mills are well supplied on contracts. The latest quotations in London are:

Pine, 50 per cent. moist (prompt) .....$9 to $10
Pine, dry (prompt delivery) .....$20 to $21

About 60 cents extra is charged for forward delivery.

In the chemical pulp markets business is very quiet, but the markets firm. As regards sulphite and sulphate most of the British paper makers are covered for sometime to come, but owing to the rise that is expected in 1914 in the prices of all chemical wood pulps, enquiries are being made for forward deliveries. A small section of paper makers is reported to be covered for sulphite and sulphate to the end of 1916. The recent busy state of the mills throughout the country and the growing expansion of the export trade, should not fail to draw the attention of Canadian pulp men to the increased demands of the British paper maker and genuine enquiries are now being made for mechanical and chemical for deliveries extending to 1914 and 1915. The latest quotations are about as follows in London:

Bleached Sulphite .....$56 to $60½
"News" or strong quality sulphite .....$33 to $35
Unbleached Soda (first quality) .....$33 to 33½
Unbleached Soda (strong) .....$33 to $33¼
Kraft, strong. .....$32 to 34½

In the rag trade merchants report a keen demand for old rags, whilst other grades are in fair request. Recently the export trade has ben considerably brisk, particularly with America. Prices still keep high and there is no sign of any reductions for some time to come. The import of foreign rags is tseady, new cuttings being lower in prices and jute and gunny gradually soaring higher.

In the chemical markets the surplus stocks of bleaching powder are practically exhausted, but prices still remain at $25½ to $26. Caustic soda is much enquired for at $48½. Ammonia alkali is in fair demand, 58 per cent. standing at $14½ to $15 per ton. Soad crytsals can now be obtained at $9½. Rosin has fallen greatly in prices.

The business passing in esparto is limited and there is a poor request for spring and summer shipments. Prices are easier at the presnt moment. No enquiries are being made for forward shipments.

There is still an excellent demand for China clay, but the demand exceeds the supply and prices rule high. 31,922 tons were exported from England in March, compared with 52,603 tons in March 1912, and 45,289 tons in March 1911. Alumina sulphate, pearl hardening, blanc fire, gypsum and bauxite remain firm and unchanged in prices.

Chambers. Ltd., has been incorporated for $40,000 to take over the business of Chambers & Simpson. Mr. James L. Chambers is president and general manager. They will represent in Canada Messrs. Bertrams, Ltd., T. J. Marshall & Co., Ltd., and Thos. Heimbach's felts.

The general use of permanent Indanthrene Blue for Bond, Writing, Ledger and Book papers and the introduction of Indanthrene Violet for fast Heliotrope Shades, has given rise to an insistent demand for faster colors in all papers.

The ever increasing range of Indanthrene Dyes together with marked improvements in our other color groups for paper, enable us to now furnish dyes in practically all shades that will answer any reasonable trade requirement as to permanence.

We suggest that the exceptional facilities of our Paper Laboratory be freely utilized, as affording an expeditious and complete solution of many complex problems as to the application, permanency or cost of colors, with which the modern papermaker is daily confronted.

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CONVERSION OF CELLULOSE.

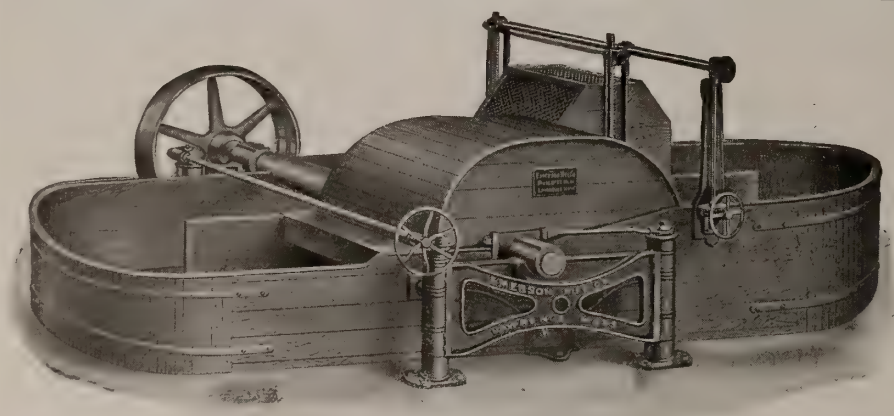
In one aspect the familiar process of mercerising is a conversion of the cellulose of cotton into hydrocellulose. The artificial silks of the day, whether made from wood pulp or cotton fibre, are all developments of cellulose, and with considerable justice it may be contended that the conversion of cellulose into some new form is the most fascinating opportunity in prospect. Something has already been done in a practical way to dissolve cellulose out of cotton cloth and precipitate it upon the surface of the fabric, there to form a layer covering the insterstices of the original surface. Again, something has been done to coat cotton fabrics with plastic cellulose or viscose. Cloth suitable for blinds, the lithographing of plans and posters, and similar special purposes, has been made by the one process, employing chloride of zinc. Cart and stack covers have long been made by treating canvas with cupro-ammonium sulphate. Artificial leathers and cloth for bookbinding are manufactured by the viscose process, yet it may be questioned whether—artificial silks apart—these manipulations of cellulose have found their chief utility in the textile industry. There are limits to the demand for non-porous and stiff fabrics, but there must be possibilities of creating effects, stopping short of rendering the goods solid.—Journal of the Royal Society of Arts.

CELLULOSE FROM THE ASPARAGUS PLANT.

To the many other vegetable growths from which it is hoped to obtain material suitable for papermaking, must now be added the asparagus plant, the source of supply of one of the most highly prized table vegetables. Dr. Reinke, professor at the technical high school, Brunswick, Germany, asserts he is able to produce from the stalks and sheaths of asparagus cellulose available for papermaking in paying quantity.

On the basis of estimates and private information in the Brunswick section, it appears that asparagus is raised on 12,000 acres, each acre yielding 16 cwt., which would give 45,000 of husks, capable of yielding altogether 12,716 cwt., of cellulose, or in round figures 1 cwt. per acre, and that the asparagus production on all the land in Germany devoted to the cultivation of this vegetable if it could all be made available, would be in round figures 2,300 tons of cellulose—or about the output for a month of a single cellulose mill.

After presenting these figures, Dr. Nurus, in the Wochenbaltt fur Papierfabrikation, concluded that the asparagus plant is available in such small quantities, that it is of but little consequence so far as papermaking is concerned, although he admits that it might eventually find utilization in the establishments engaged in the production of cellulose from straw.



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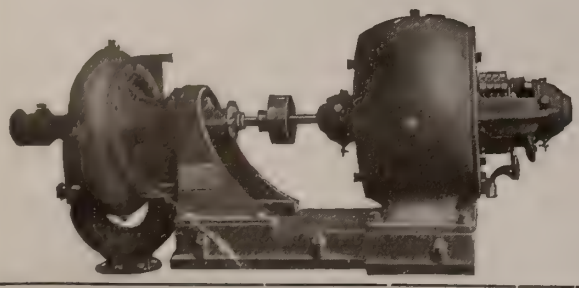
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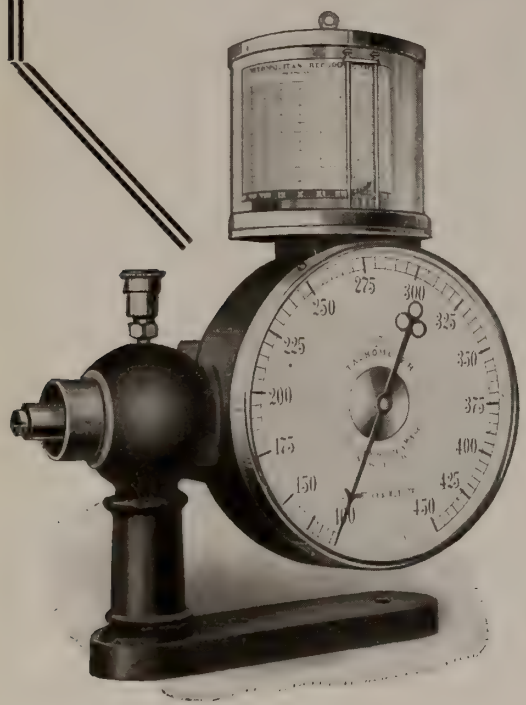
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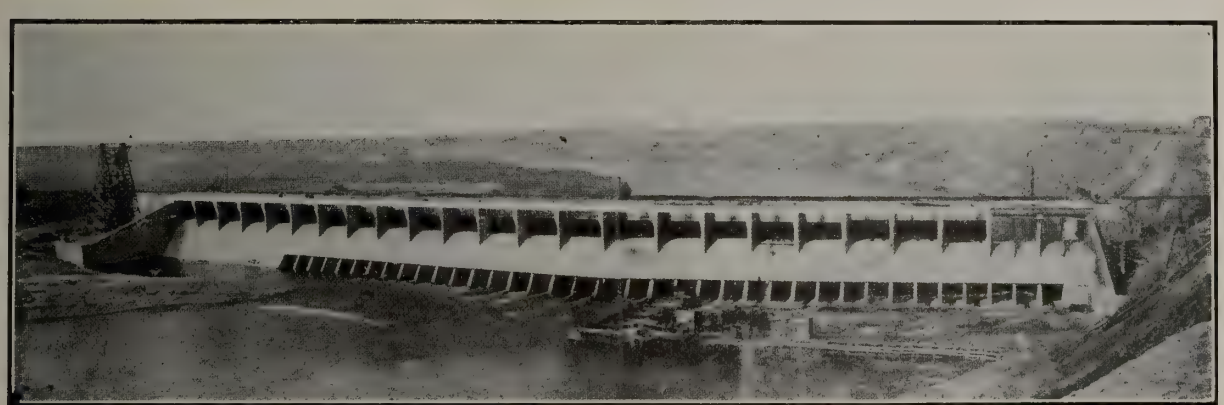
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INDEX TO MILL SUPPLIES

This directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Barkers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Canadian Barker Co., Ltd., Sault Ste. Marie, Can.
Green Bay Barker Co., Green Bay, Wis.
Jenckes Mach. Co., Sherbrooke, Can.
Hamilton, Wm., Co., Peterboro, Can.
Waterous Engine Works, Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.

Beaters
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Holyoke Mach. Co., Holyoke, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Brantford, Can.

Beater Rolls
Bentley & Jackson, Bury, Eng.
DeCew, J. A., Canadian Express Bldg., Montreal, Can.
Marx, J. & Co., London, E.C., England.
Tippet Arthur P. & Co., Montreal, Can.

Belting
Dominion Belting Co., Hamilton, Can.
Federal Engineering Co., Toronto.
Reddaway, F. & Co., Montreal, Can.
Sadler & Haworth, Montreal, Can.

Bleaching Powders
Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Winn & Holland, Montreal, Can.
Klipstein, A. & Co., Ltd., Montreal, Can.

Boilers
Jenckes Machine Co., Sherbrooke, Can.
McDougall, J., Caledonian Iron Works, Montreal, Can.

Brass Wire Cloth, Fourdrinier Wires
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier St., Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Camel Hair Belting
Reddaway, F. & Co., Montreal, Can.

Calendar Rolls
Dillon Machine Co., Lawrence, Mass.
Farrell Foundry & Mach. Co., Ansonia, Conn.

Chemicals, Colors, Etc.
Brunner, Mond & Co., Montreal, Can.
Gewerkschaft Sachtleben, Homberg, Niederrheim, Germany.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter St., Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Valley Iron Works, Appleton, Wis.

Chip Screens—
Carthage Machine Co., Carthage, N.Y.

Cranes
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Northern Crane Co., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.

Conveying Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Can.

Cutters
West End Engine Works, Edinburgh, Scotland.
Dillon Machine Co., Lawrence, Mass.
Chambers & Simpson, Toronto.

Cylinder Covers—
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Dandy Rolls—
Johnson & Sons, C. H., St. Henry, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining
Can. Boving Co., Toronto.
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Evaporators
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.
Zaremba Co., Buffalo, N.Y.

Experimental Machinery—
Marshall, T. J. & Co., Ltd., London, Eng.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Ayers, Ltd., Lachute Mills, Que.
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Heimbach, Thos. Jos., Ltd., Duren, Germany.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.
Process Engineers, Ltd., Montreal, Canada.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

Jute Cloth
Wardlaw, T. D., Toronto, Ont.

MILL SUPPLIES CONTINUED

Laying Machines
Chambers & Simpson, Toronto.
Collis & Sons, J., London, Eng.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines

Twines
Wardlaw, T. D., Toronto, Ont.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.

MILL SUPPLIES CONTINUED

Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines

Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste

Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines

Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont
Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Kraft—

Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—

Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., Montreal Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—

McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—

Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—

Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,
Deputy Minister.

Department of the Interior, Ottawa,
December 20th, 1912.

PAPER MILLS CONTINUED

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Corrugated Paper—
Lazier Paper Mills, Ltd., Belleville.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

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Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

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Interlake Tissue Mills, Ltd., Merritton, Ont.
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Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst,

Minister of Lands, Forests and Mines,

Toronto

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Campbell Lumber Co., Weymouth, N.S.
Eddy Co., The E. B., Ltd., Hull, Que.
Gore Paper Mills, Dundas, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Wrapping—
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Scotch Fibre", "Invictus Fibre", Hercules Manilla", St. Francis Manilla", "Wave Crest Drug."
Crabtree & Sons, Edwin, Crabtree Mills, Que.
Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont .
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Montreal Paper Co., St. Bazile, Que.
News Pulp & Paper Co., Ltd., Montreal, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Strathcona Paper Co., Strathcona, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

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Edmonton, Alta.
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Saskatoon, Alta.
Tees & Persse.
Vancouver, B.C.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
Victoria, B.C.
Mitchell Bros., 8 Bastion.
Moose Jaw, Sask.
Tees & Persse.
Regina, Sask.
Tees & Persse.
Winnipeg, Man.
Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Douglas & Ratcliffe.
Hudson Paper Co.
Kilgour Bros.
Martin, John, Paper Co., Ltd., 319 William.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
St. John, N.B.
Schofield Paper Co., Ltd., 26-30 Prince William.
Moncton, N.B.
Reid, F. P. & Co.
Halifax, N.S.
Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.
New Glasgow, N.S.
McGregor, R. & Co.
Kingston, Ont.
Hendry, J. A., 75 Princess.
Hamilton, Ont.
Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.
Ottawa, Ont.
Barnard, W. R., 228 Albert.
Reid, C. De Wolf.
Port Arthur, Ont.
Tees & Persse.
Toronto, Ont.
Barber-Ellis Co., Ltd., 71 Wellington St. W.
Brown Bros., Ltd., 51 Wellington St. W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay St.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gain, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George
McNairn, J. H., 5 Jarvis.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Whyte, Alex., 64 Wellington St. W.
Wilkinson, E. H., Telephone Building.
Montreal, Que.
Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
Lloyd, Ed., Ltd., Eastern Townships Bank Building.
McFarlane, Son &Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Co., 138 McGill.
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Andrews, F. H. & Son, 64 St. Paul.
Reid, C. De Wolf, Herald Bldg.
Rolland, J. B. & Son, 36 St. Paul.
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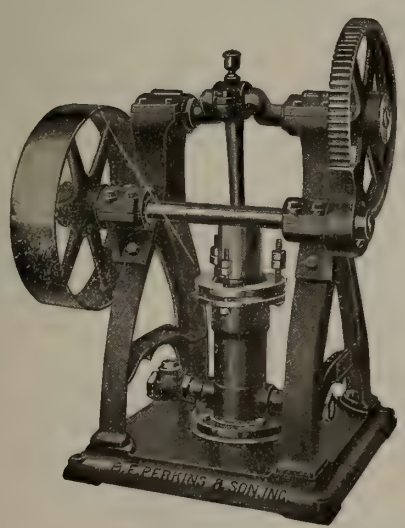
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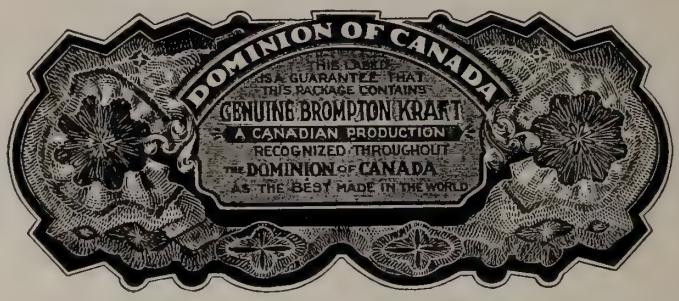
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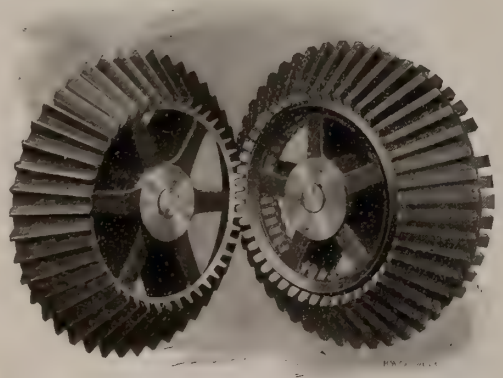
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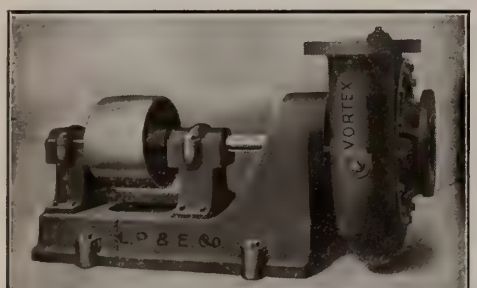
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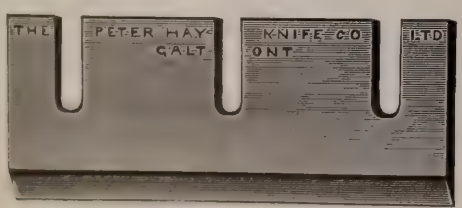
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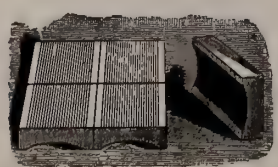
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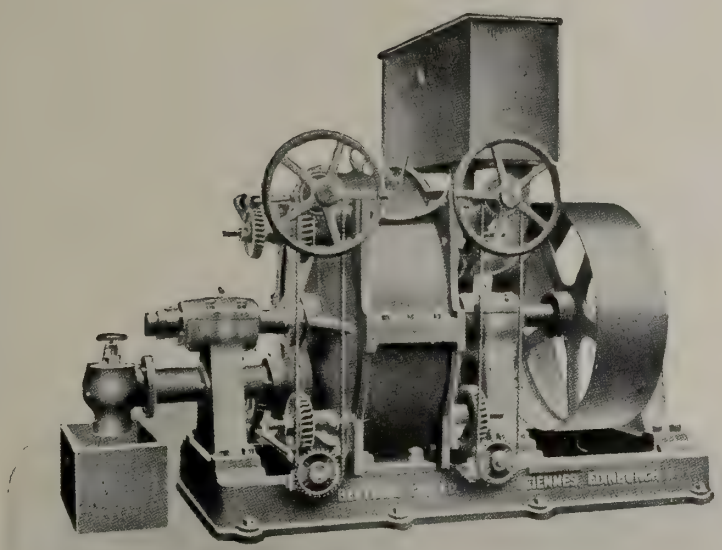
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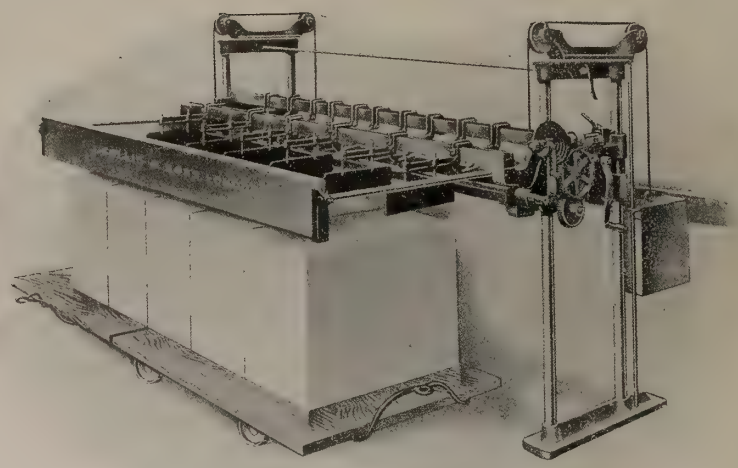
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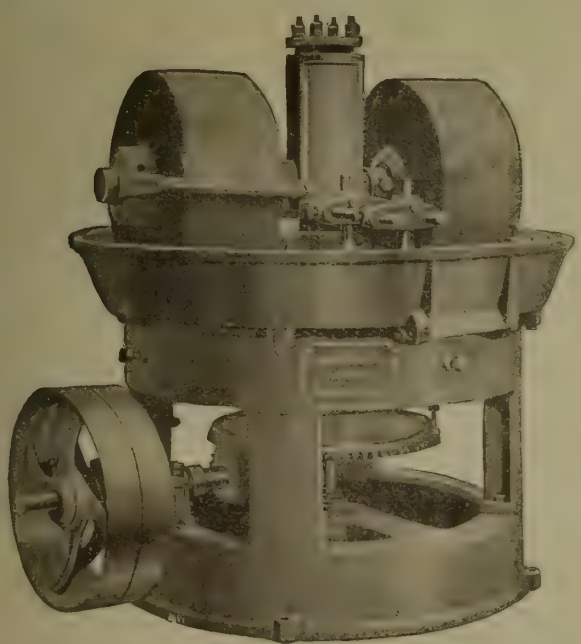
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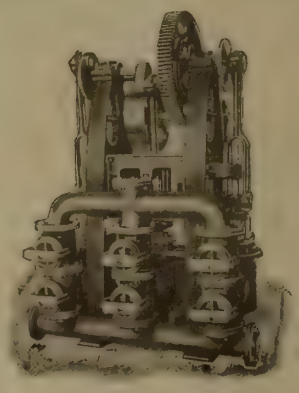
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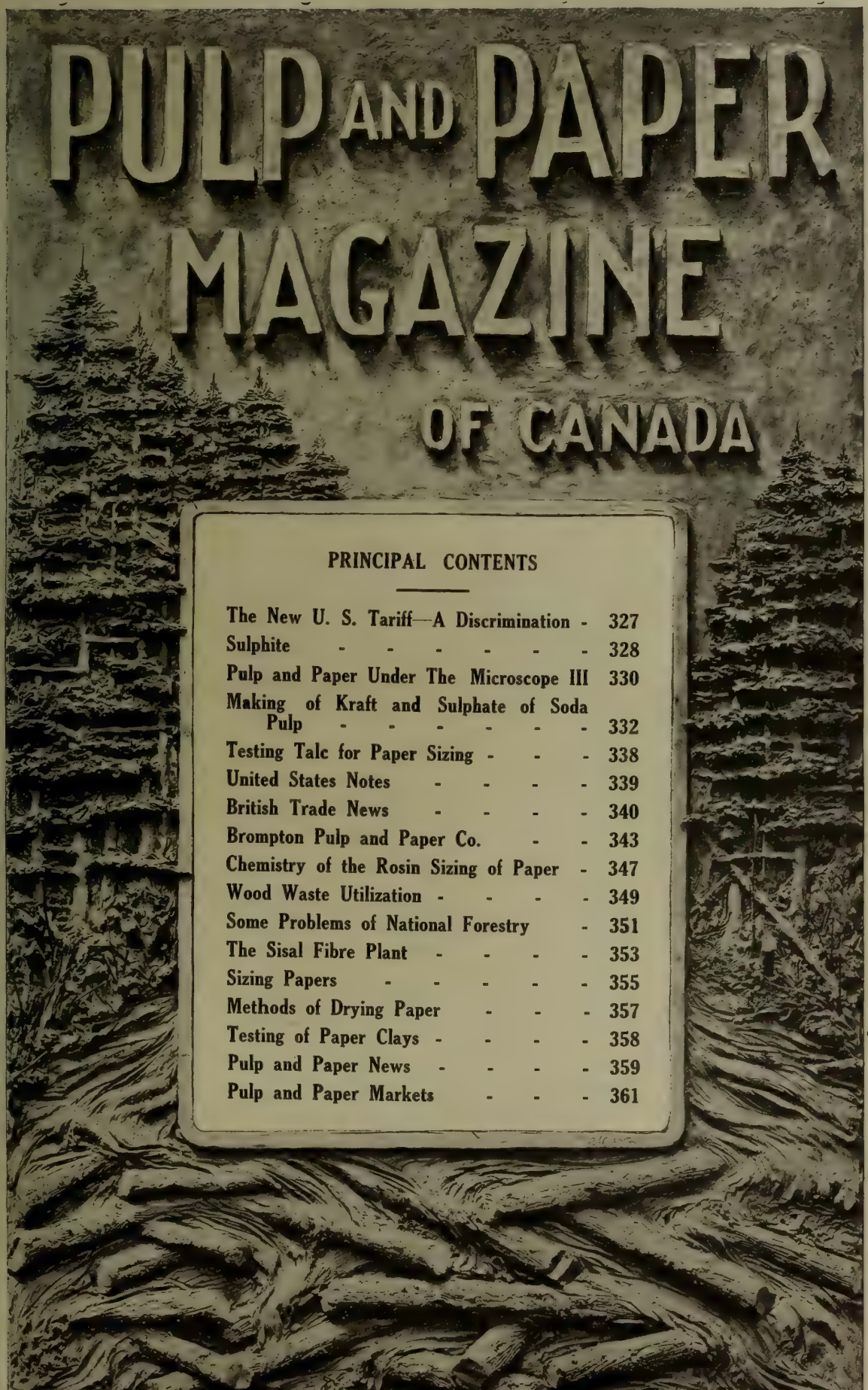
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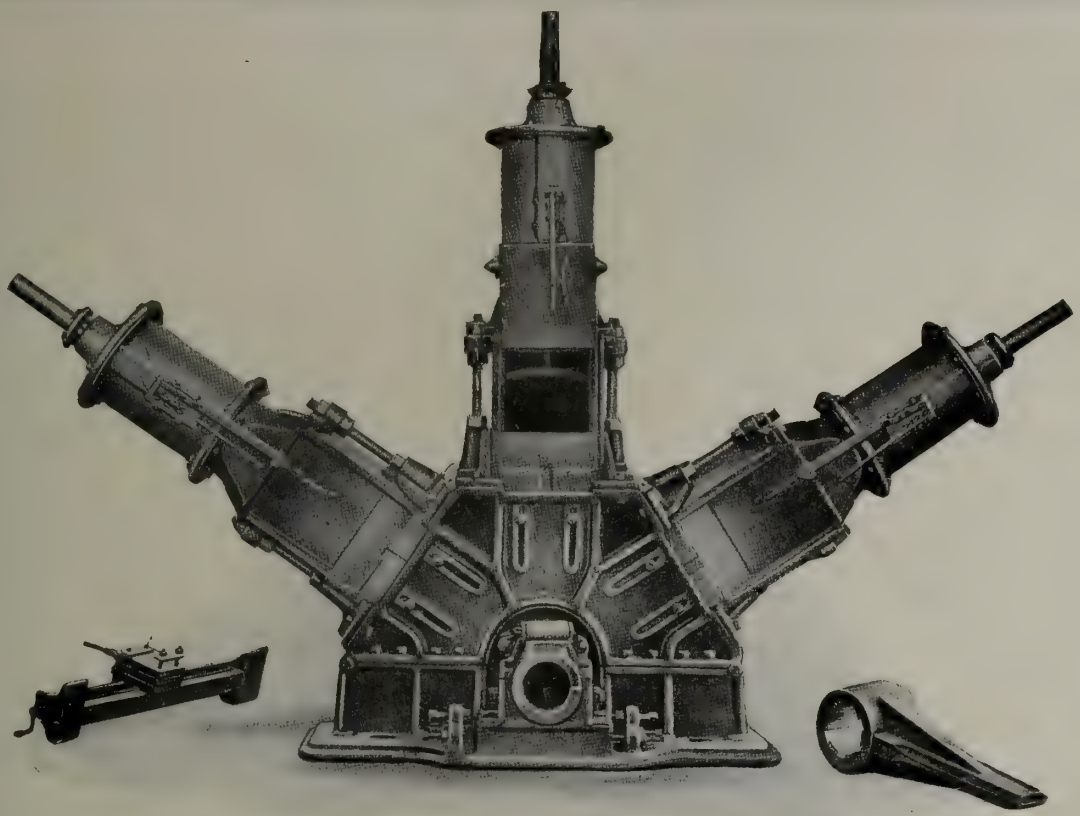
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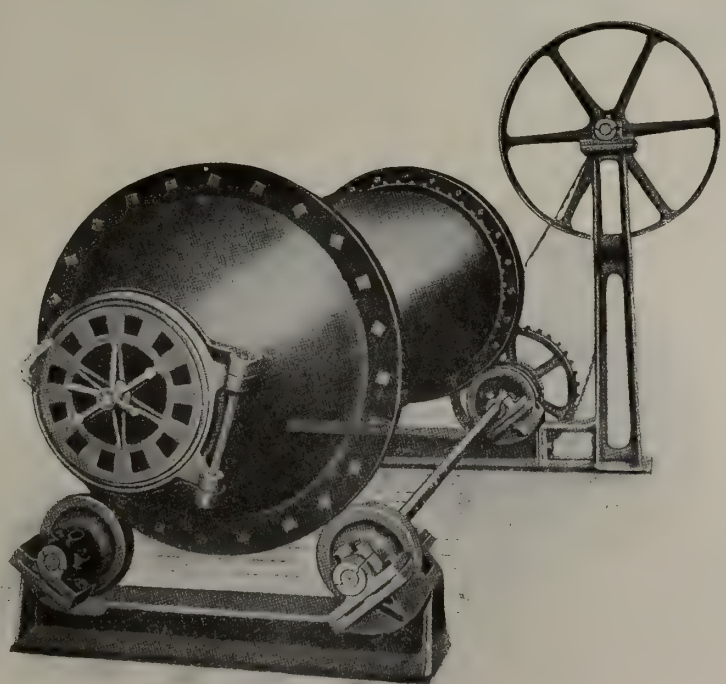
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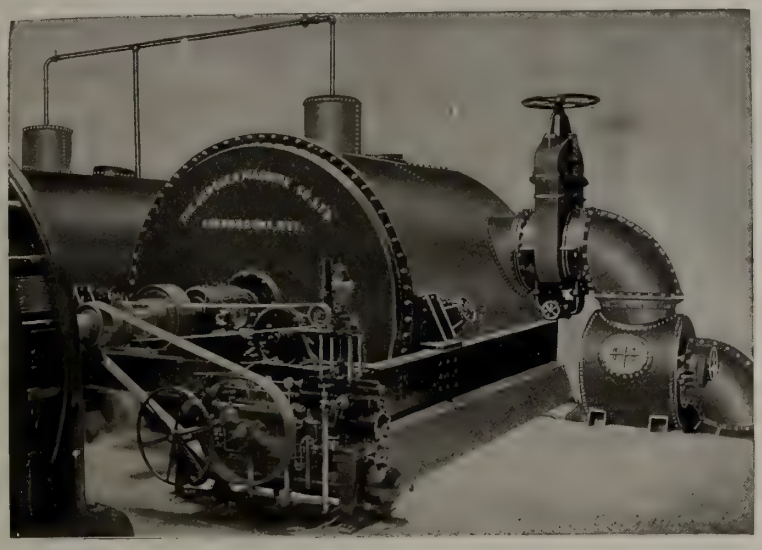
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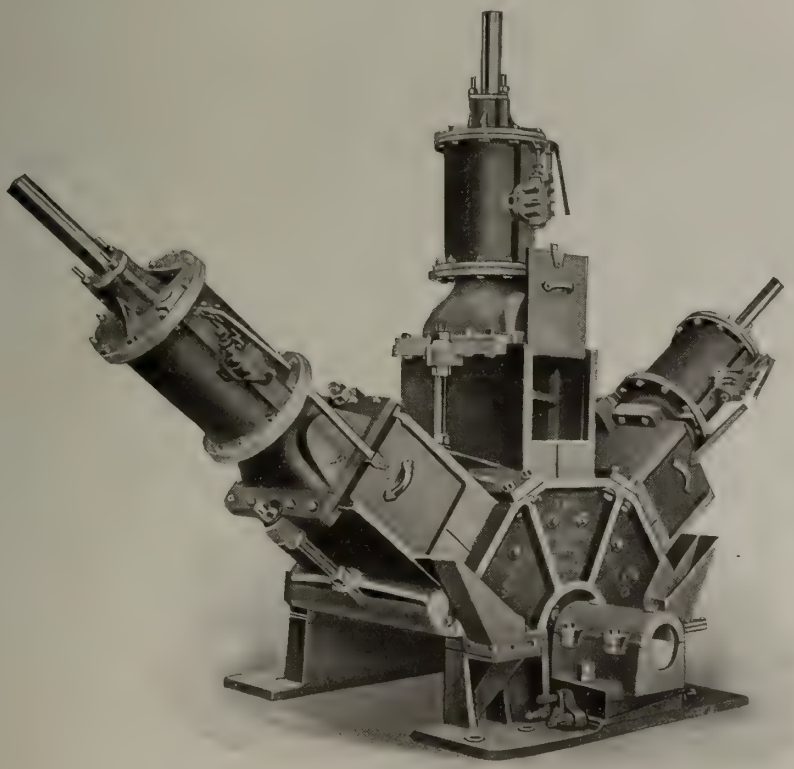
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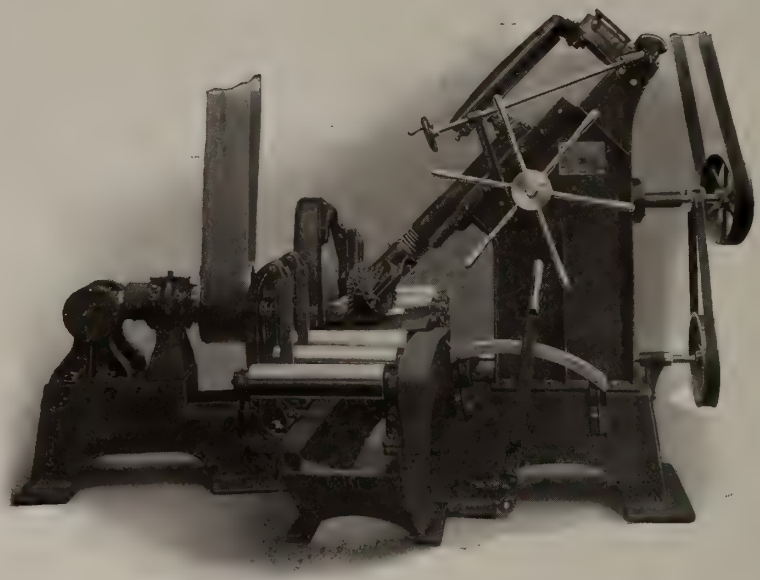
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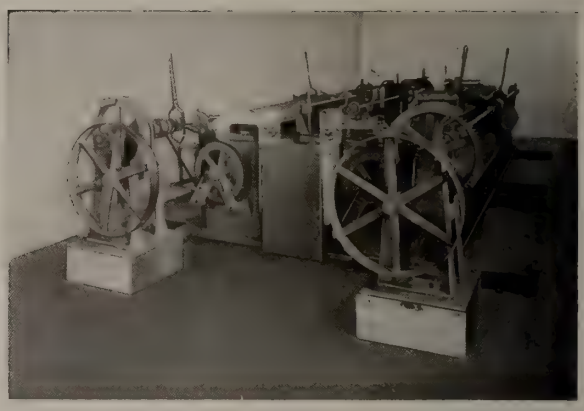
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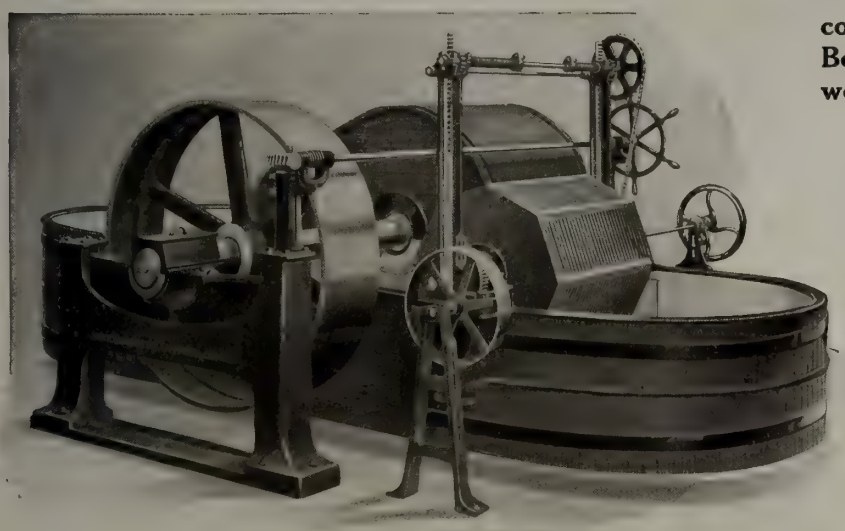
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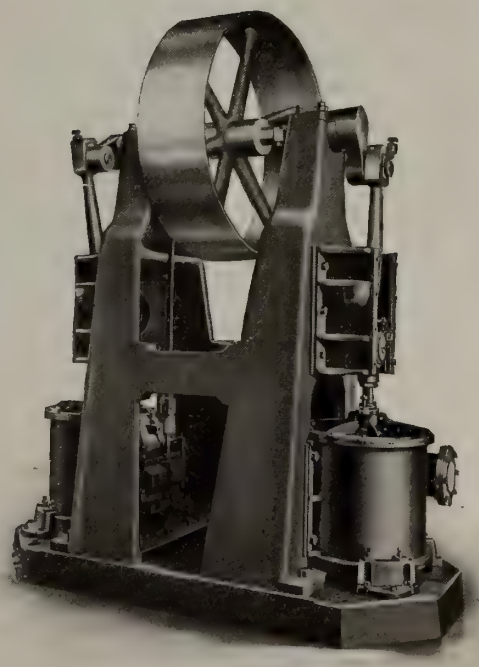
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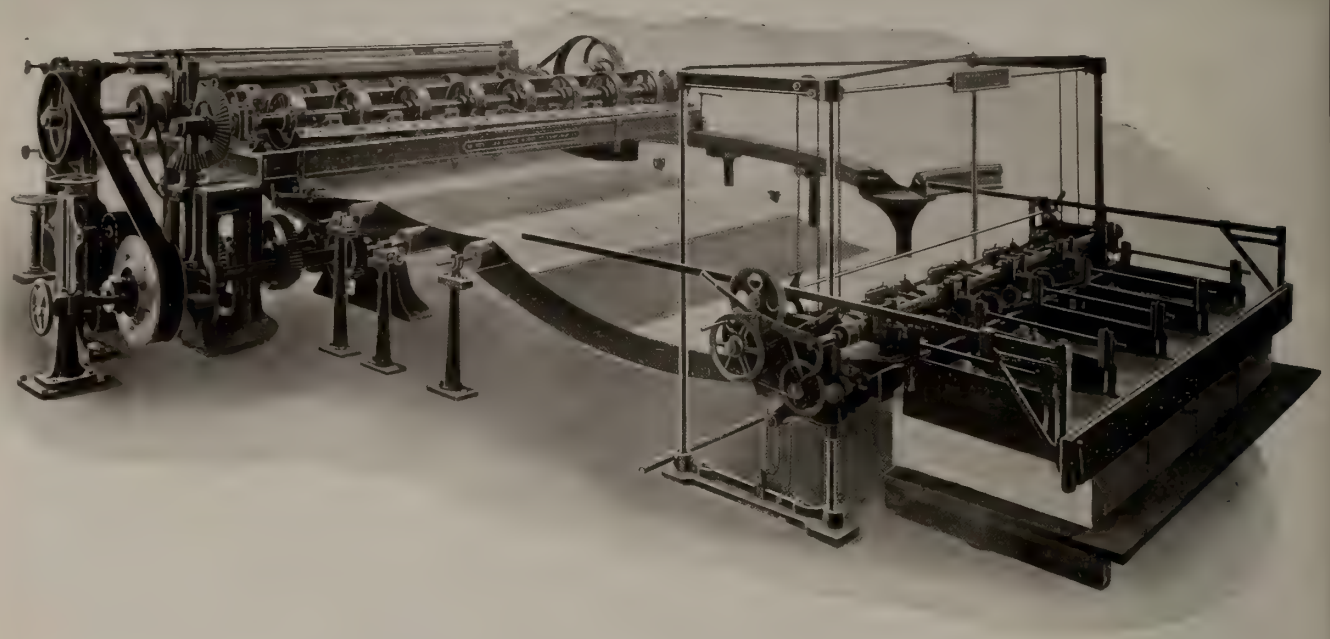
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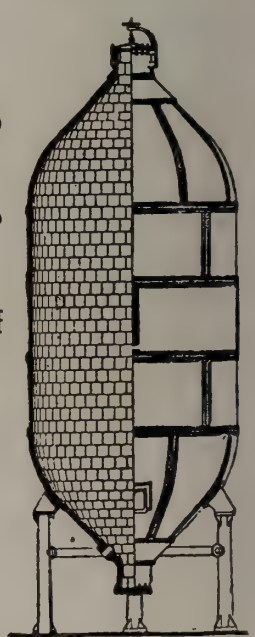
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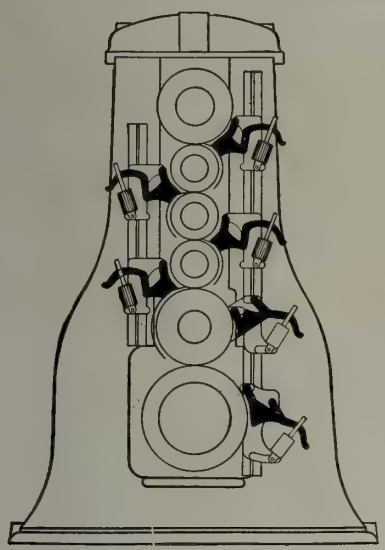
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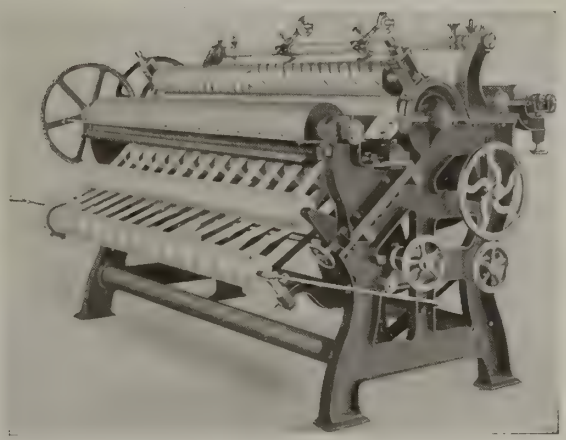
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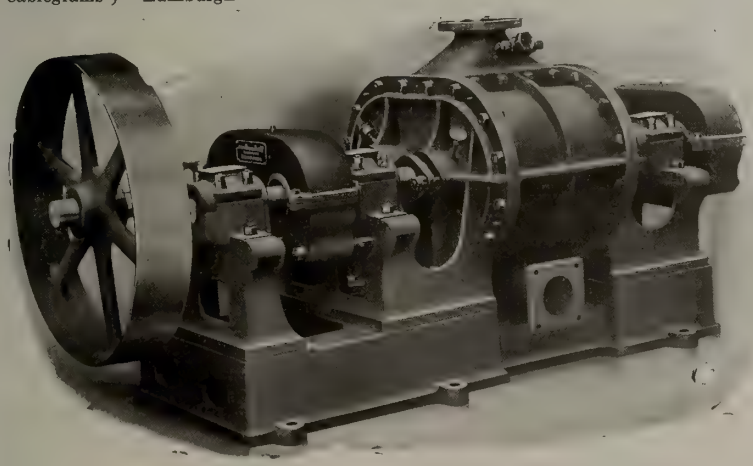
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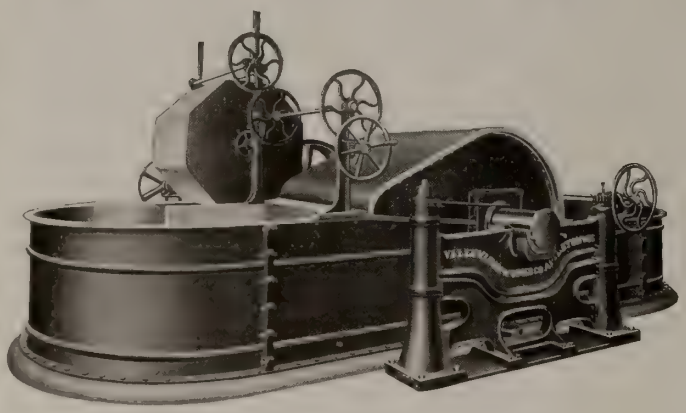
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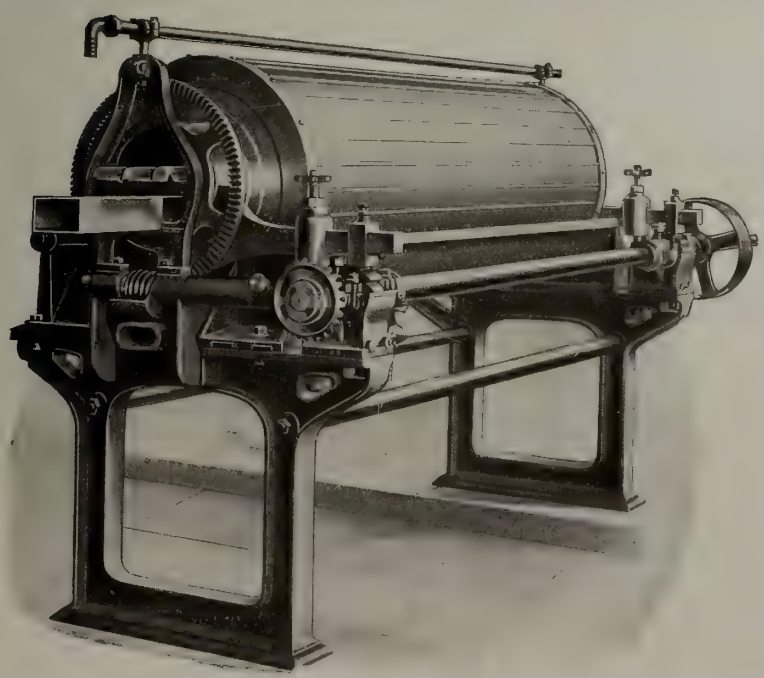
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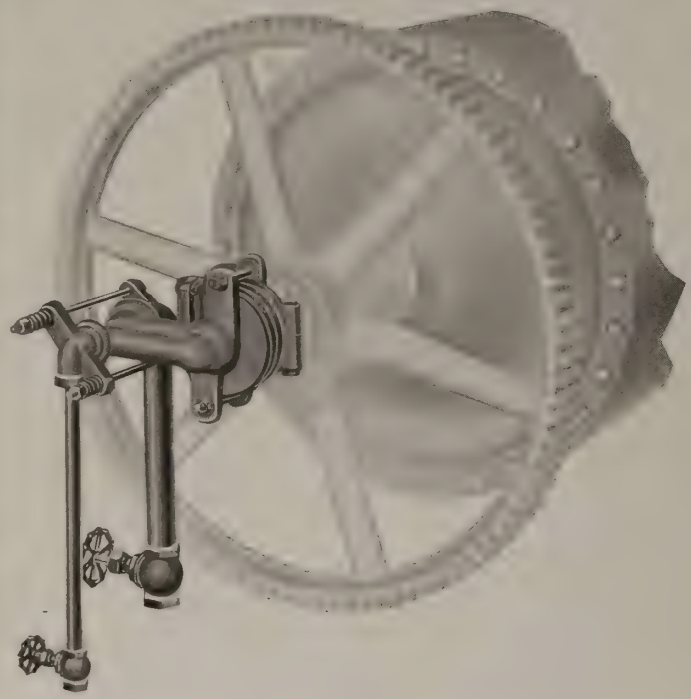
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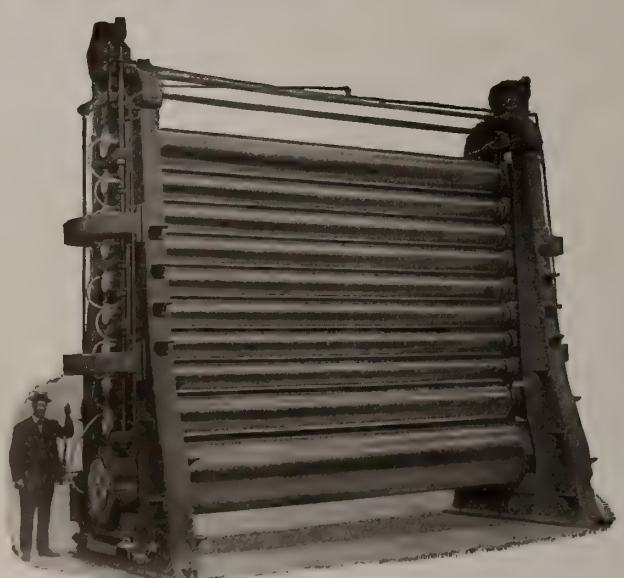
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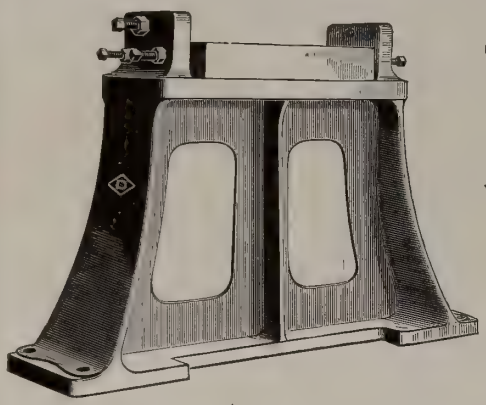
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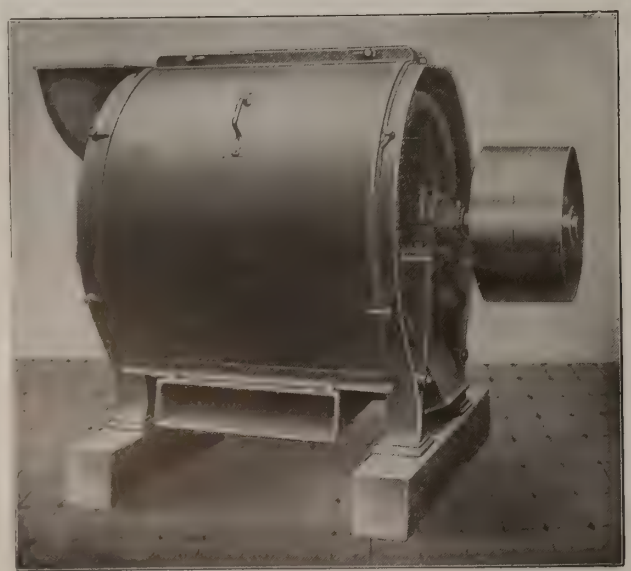
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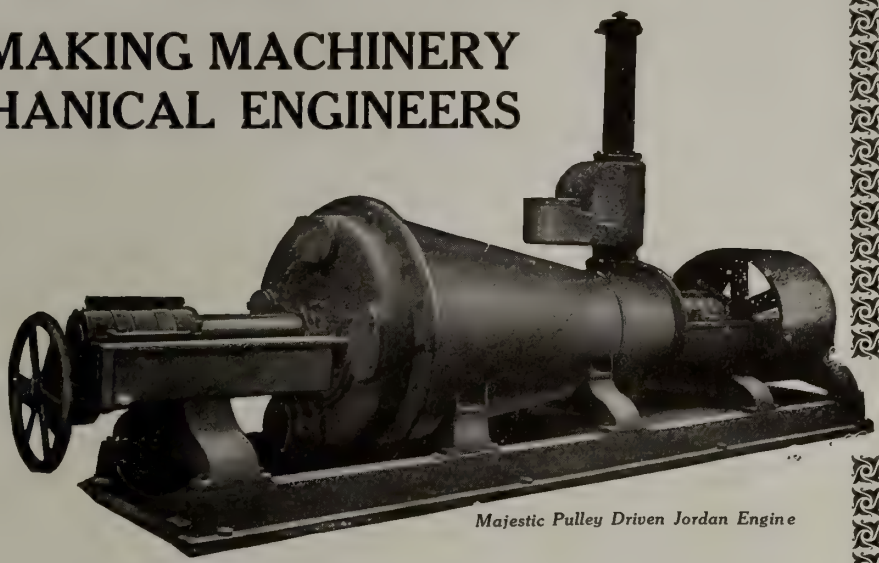
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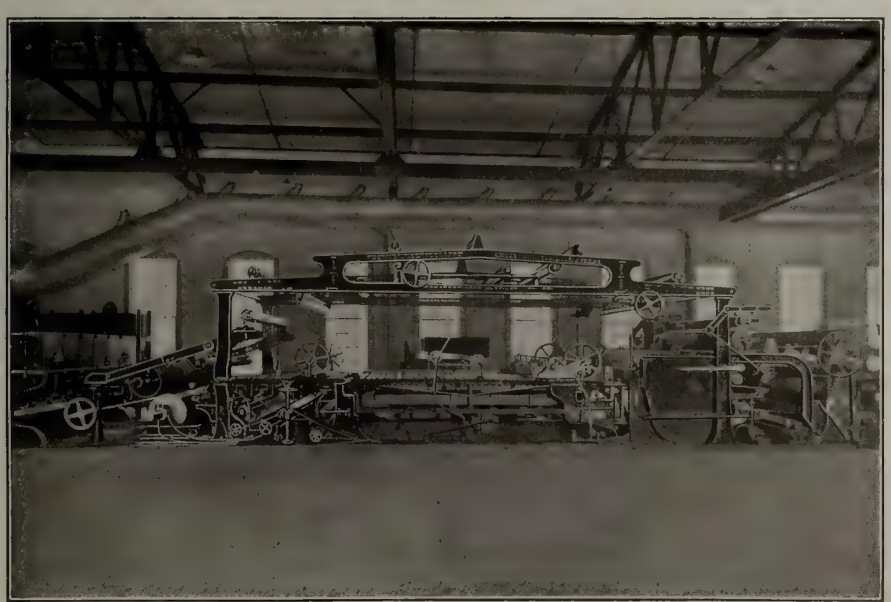
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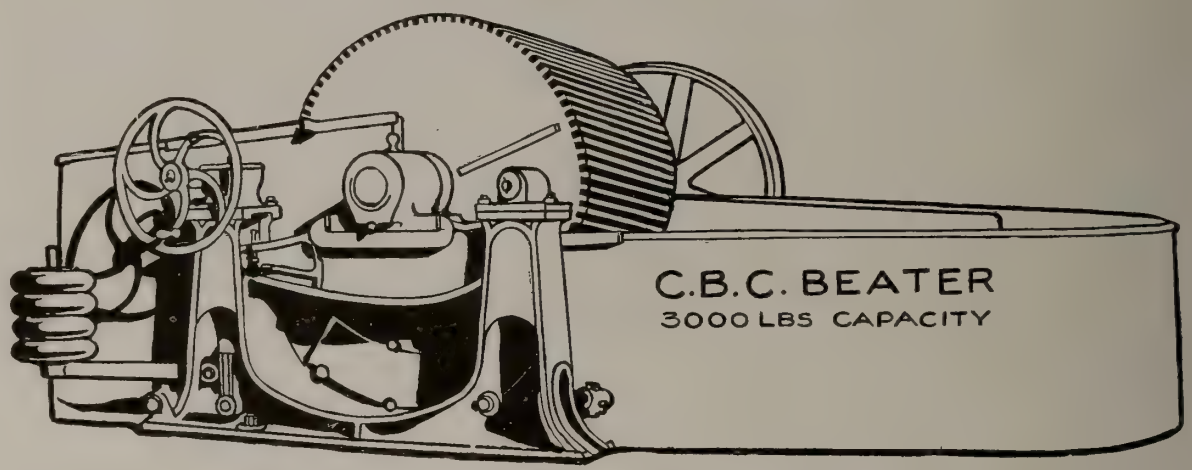
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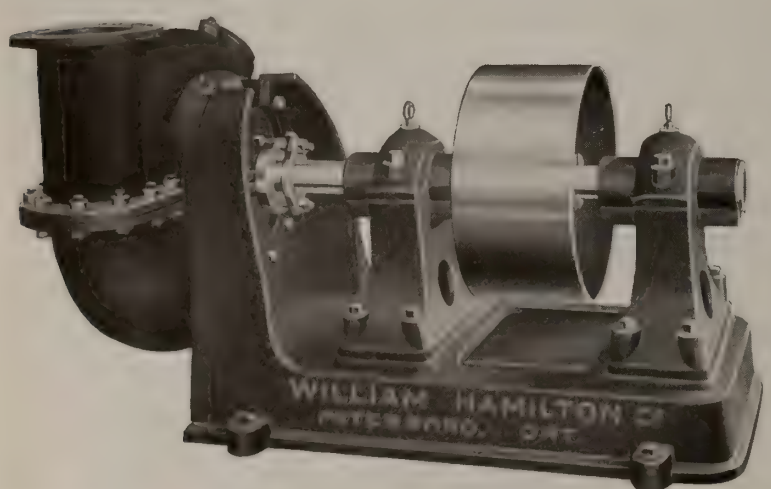
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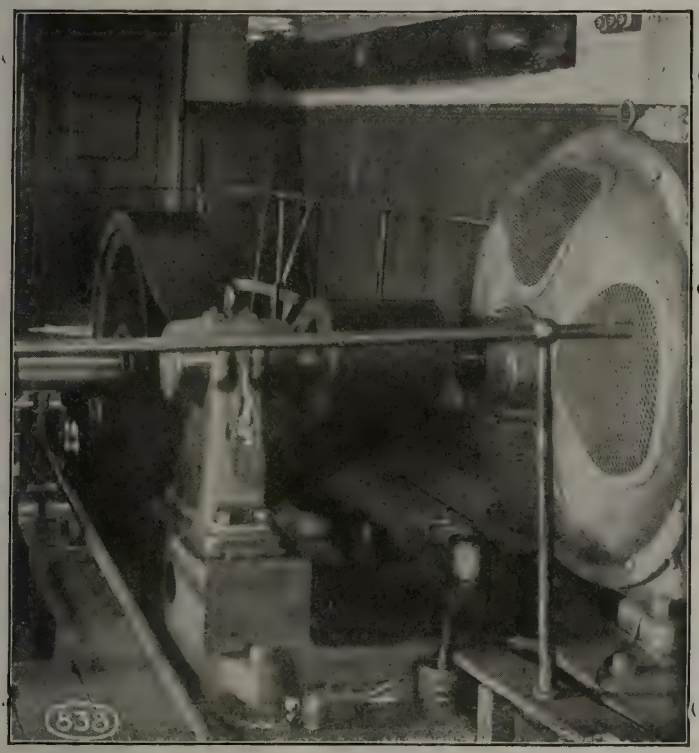
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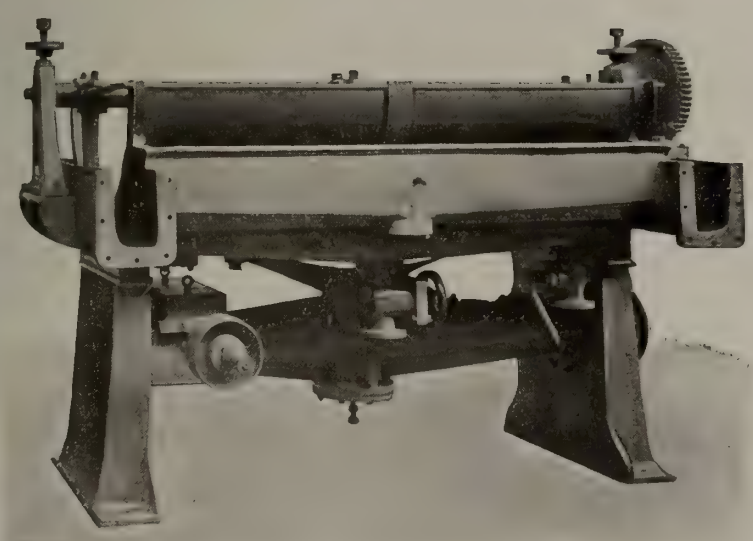
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VOL. XI. TORONTO, MAY 15, 1913 No. 10

THE NEW U. S. TARIFF — A DISCRIMINATION

The more thoroughly the new proposed tariff of the United States has been investigated by experts, it is found that it is a glaring case of discrimination against Canada. The fact that under present conditions we restrict the export of our wood from our Crown lands, and that other countries, chiefly Sweden, etc., do not have any such restriction, makes a condition of which the American tariff makers were well aware. In face of this, however, they have completely discriminated against Canada, and might as well have inserted the word "Canada" in place of the wordy phrases used. It is plainly a slap to induce us to remove our wood restrictions, and in the case of chemical pulp, sulphite, soda and kraft, it will mean a severe handicap. Their purpose is avowedly to induce us to remove these restrictions as they also hoped to do under section 2 of the Reciprocity Act. The present clause, however, will be much less efficient in this connection than the former, since our exports of chemical pulp are only a small fraction of our newsprint exports to the American market. Our sulphite industry is faced by a severe collapse which will practically mean the exclusion of our fibre from the American market. The discrimination against us in this manner, is from the Americans' point of view, a most short-sighted policy. As pointed out elsewhere, Canada buys from our southern neighbors $365,000,000 worth annually of manufactured products, while Scandanavia only takes about $25,000,000. They have then discriminated against a good customer to the advantage of a poorer. This clause which shows the stick so prominently to Canada must awaken much resentment on the part of our domestic manufacturers. Instead of removing our wood restrictions we should retaliate against such discrimination by a Dominion Act which absolutely forbids the export of wood from both freehold and Crown lands. As our readers well know, the present restrictions on wood export are entirely provincial. The provinces have no authority to forbid such an export from freehold land, but in the face of what our American neighbors have done against us in not giving us an equal show in their markets with other countries, our Dominion Government should hasten to retaliate by absolutely prohibiting wood export from any part of Canada. Indeed, such discrimination might be interpreted as a breach of treaty rights, which, however, is a minor matter with American legislators. They evidently care little for the abrogation of treaties of any description, and, indeed, there is large backing to the agitation to repudiate all treaties which do not entirely favor the United States. This question has been little thought of until very recently, and doubtless few of our manufacturers realize what a glaring discrimination the new tariff means against us. We do not ask our American neighbors to give us any special concessions, but we do expect on account of the fact that we are such good customers of theirs, that we shall have at least an equal standing with other countries in our business relations with them. It seems an absurd situation that they are allowing free newsprint, and charging duty on sulphite, one of the raw materials in their own manufacture. Thus they have doubly stabbed their own newsprint maker. This matter has already aroused considerable agitation in Canada among a limited circle, and we doubt not that before long some drastic action will be taken in regard to our wood export to United States.

SULPHITE

The Pulp and Paper Magazine took occasion to point out a few weeks ago, that there were signs of over production in sulphite coming within the next few years. Later information has shown that this erred only in being too moderate. The pulp manufacturing industry of Canada is face to face with one of the gravest indications which has menaced the prosperity of the industry in years.

Figures prepared by the Canadian Pulp and Paper Association show that there is at present a proposed increase in tonnage of sulphite for the next twelve or eighteen months of 760 tons for sale, which will about treble the present entire sulphite production in Canada.

There is no doubt that our present markets can absorb about 100 tons more. This increase, however, would be amply covered by the proposed enlargements of the existing sulphite plants, such as Riordon's, Booth's, Laurentide and Partington's, which are under construction.

This makes the situation for those who are going into the market a very grave one, since the Canadian market is so very limited that such a phenomenal jump will have the most serious effects. It is absolutely impossible for our own market to absorb but a small fraction of this production.

Doubtless many contemplating these mills have an idea of entering the American market, but this situation has taken a very different phase during the last few weeks under the new proposed American tariff. On account of the Provincial clause in the new tariff all chemical pulps from Canada will have to pay the duty of 1/10th of 1 per cent., whether coming from freehold or Crown lands. Considering that at present European sulphite enters the American market under a handicap of $3.33 in keen competition with Canadian sulphite, it is evident that European manufacturers have a total advantage of $5.33 over present conditions against Canadian sulphite. This, on the face of it, prohibits almost exclusively our competition against them, in this market, at least, for many years. Indeed one new mill in Canada has already contracted for their total supply of sulphite from foreign makers. This mill sells its products entirely in the United States, and has the duty refunded by the American Government; hence it was able in face of a particularly low price from a Canadian manufacturer of sulphite to buy Scandinavian even alongside the doors of one of our own sulphite mills.

The situation has assumed a most grave aspect, which is little realized by the Canadian industry in general who are thus proposing to build sulphite mills.

Another point is the increase in production of kraft in Canada by 90 tons, which has affected the home sulphite market, since wrapping mills who used sulphite are now substituting the kraft pulp. The fact that the new tariff also hits kraft pulp will further discriminate against Canadian export, so that we have to figure a total of 850 tons of chemical pulp increase in 1913, which on the face of it is an impossibility to absorb.

This will not affect to such an extent the larger mills who have their manufacturing processes on a better basis than any new mill can, for sulphite manufacture is very different from groundwood in that it takes very much longer to get a mill on an economical basis. Financial institutions and capital in general which is being approached in connection with sulphite should absolutely turn down any suggestions in this direction.

The new tariff has not been such an advantage as was expected. On the whole we are but little better off than we were before it passed. Newsprint and groundwood are really the only things which are helped, and when we consider that 87 per cent. of our newsprint went into the States free of duty formerly, we have gained but little by these reductions.

All this will tend to make sulphite investment most hazardous and one of the least desirable pulp and paper investments in Canada.

SALESMEN SHOULD BE ENGINEERS

One or two of our largest mills who are adding new equipment have called attention to the fact that the majority of salesmen of the supply houses are not qualified, as they would like, to discuss their equipment on an accurate and scientific basis. It seems that the majority of salesmen sent out by even the largest houses have no further "selling talk" than that they insist that their particular machine is the best made for that work. This naturally is not usually a sufficient argument with purchasers. Indeed it is not sufficient for a salesman to point to another man's mill, and show one of his machines working satisfactorily. Manufacturing conditions are so different in all mills, and, besides, it is a bad policy to buy equipment simply because some one else bought the same thing. As these manufacturers have pointed out, it would be much better for supply houses, as well as for the mills themselves, if these firms sent salesmen who were competent engineers, and who could discuss the pros and cons of their equipment on scientific basis with intending purchasers. It is most exasperating to have a salesman make a long trip and when he arrives not be capable of giving the information which most mills seek. The result has been that equipment is bought chiefly on recommendation instead of absolute merit. This has resulted in a loss, not only to the manufacturer of paper, but also to the vendor of the highest class of machinery. True, many of our mills are not equipped with a competent staff to pass accurate judgment on new equipment from this point of view, but there are very many who are attempting to buy their equipment on this basis. The number of those so inclined, we are happy to say, is rapidly increasing, because this tends to greater efficiency in all branches of production. We know that it is most difficult for a large firm to send one of their engineers on

the road, for the reason that his training is usually not of an executive or business nature. If, however, these men were run through the regular departments, as most of the salesmen are, and obtained a business selling talk, in that way his backing as a trained man, knowing every part of the machine he is selling, and knowing why each part is made as it is, can back up his argument that the machine is better, than anything else on the market, by sound, scientific and business argument. This will not either be more expensive since it is just as easy to take a man from the engineering department and turn him to the sales end, as it is to take a man from the other departments. This practice has proven very successful in many other lines, and we hope to see more engineering salesmen on the road selling pulp and paper mill equipment.

PULP AND PAPER FINANCE

Within the last few months, the question of finances has come before the Canadian public in general to a wonderful extent.

The slump in the market has brought about many searching inquiries in the whole field of finance, in which pulp and paper has shared.

It is encouraging to note that the closest scrutiny has in most cases but proven the sound finances of the majority of our pulp and paper mills; indeed, some of the soundest offerings on the market to-day in industrial stocks and bonds are those offered by our industry.

It is probably easier to raise capital for a pulp and paper development in Canada than for any other general industry of any size. The public look with the greatest favor on all promotions of this nature since most have up to the present been on a sound basis.

There have been a few cases, however, which have raised considerable question within the industry itself, and among financial men as well. Sound finance is by no means summed up in the paying or increasing of dividends. An old mill in need of new equipment or enlargement or reconstruction should never consider increasing dividends with the idea of issuing new bonds against the extensions to their full value. It would be much better for the industry as a whole, and for Canadian finance in particular, if instead of jumping dividends—which may be warranted by the earnings—mills turned part of these earnings to improvements or changes.

It so happens that in one or two instances some of the older mills in Canada have enjoyed a peculiarly enviable position and made enormous returns from their output. It must be remembered, however, that competition is growing keener every day, that capital is seeking wider channels for expansion in this industry and we should anticipate closer competition in marketing our products.

It is always to be regretted that financial houses may take hold of a going concern and so water the stock or inflate the market price that it handicaps the management of the mill to keep dividend rates and make a showing.

The financial interests of every business should consider more than perhaps they now do, the mill end, and err rather on the side of being conservative in declaring dividends and making a hit on the stock market; especially in the face of present monetary conditions the greatest care should be exercised in anything connected with the financial end of a business.

EDITORIAL COMMENT

The leading article in this issue, by A. V. Tracy Gould and J. M. Iversen, on Sulphate of Soda and Kraft Pulp, is one of the best things which has been written on this subject in recent years. Current literature and books have dealt chiefly with sulphite, soda and ground wood and paper, for the reason that those who were sufficiently familiar with the manufacture of sulphate were not inclined to give any information to the public.

The writers of this article, however, have given the subject most serious consideration, and the information contained therein should be of immense interest to the pulp and paper industry generally.

It is not commonly realized that sulphate of soda pulp can be used for anything except wrapping paper. We trust that this impression will be corrected, to some extent, at least, by the authors of this article. Some of the highest grades of paper can be manufactured by the sulphate process, which offers very many advantages, and we anticipate much more interest being taken in this phase of pulp manufacturing in Canada.

BOOTH RAISES WAGE SCALE

(Special to the Pulp and Paper Magazine.)

Ottawa, May 13.—Employes of the J. R. Booth paper mills have received an increase in wages. Negotiations have been under way for some time in the matter of increases and the firm has evinced a somewhat reciprocal spirit. It may be recalled in this regard that J. R. Booth was the first Ottawa Valley lumberman to raise materially the rate of wages and decrease the hours of mill men.

The employes engaged in the paper mills are graded. Their new salary schedule, which involves a 30 cent increase all round, is as follows: Machine tender, $4.25; back tender, $3.30; third hand, $2.30; fourth hand, $2.05; fifth hand, $1.80. The machine tenders are the only exception to the 30 cent advance, getting a 25 cent one. These wages are payable on the eight hour day.—Mac.

SMART BAG COMPANY

(Special to the Pulp and Paper Magazine.)

Ottawa, May 13.—The success of the Smart Bag Co., of Montreal, in the past few years and the largely increased demand for the products of Woods, Ltd., of Ottawa, had for some time forced the directors to the necessity of increased facilities. Now that these two concerns have come together as the Smart, Woods, Ltd., these plans have become definite projects, and the capacity of the various plants is being largely added to through building operations being carried on simultaneously at Montreal, Toronto and Winnipeg.—Mac.

PULP AND PAPER UNDER THE MICROSCOPE

By SINDALL AND BACON

(Special Series of Contributions to Pulp and Paper Magazine)

CHAPTER III

Reference was made in the previous chapter to methods of recording the appearance of a fibre under the microscope. This is effected either by a microphotograph, or a freehand drawing. As a correct representation the former is no doubt to be preferred, but for rapid systematic comparisons, a drawing offers many advantages. We now give brief notes on both methods.

Drawing by Aid of Reflected Light.—One of the simplest devices for this purpose is known as Beales tint reflector. It consists of a small circular blue tinted glas mounted in a brass frame, and fixed by a swivel to a collar. This can be sliped over the eyepiece of the microscope, as shown in Fig. (5), which illustrates the instrument erected in position for making the drawing.

The microscope is tilted into a horizontal position, so that the centre line through the eyepiece is as nearly as possible 10 inches above the table. The light reflector below the stage is turned away (r) and a lamp or electric light conveniently placed as at (c). The object is mounted on the stage, and fixed by the clamps (m), while the Beale's reflector is slipped over the eyepiece, and adjusted as shown at (b). The observer looking down through the tinted glass from the point (a) finds the fibre or object reflected on a piece of paper placed on the table at (p). A small card screen (s) is required so that the amount of light falling on the paper direct from the lamp (c) can be regulated properly. The outline of the fibre after being focussed can then be traced by means of an ordinary pencil, and any strongly marked features may also be drawn. Any minute detail or any shading is better copied by freehand drawing than by laborious tracing.

The student may experience some difficulty in seeing the outline of the object and the point of the pencil at the same time. This is merely a question of adjustment of the light. To reduce the light passing through the microscope, when necessary, a small sheet or two of tissue paper can be inserted on the substage between the object and the light. The screen (s) serves to reduce the light falling direct on the paper.

This method of reproducing a record of a fibre has its limitations since it demands a certain amount of skill in drawing, but for making a number of rough sketches quickly it cannot be surpassed, and these can easily be drawn to the same scale.

Microphotographs.—In any systematic work on the fibre characteristics of wood pulps there is nothing more satisfactory than a series of really good photographs, showing the fibres under varying magnifications, and the different tracheids peculiar to each. The apparatus needed is not complicated consisting of a good camera with extending bellows, and the microscope with objectives of good definition.

The microscope is adjusted in the horizontal position similar to that employed in drawing, the eyepiece is removed, and the end fitted to the front of the camera, by a telescopic tube made of brass or stout paper. This must be well blackened inside to keep out light, and arranged so as to allow the body of the microscope to slide backwards and forwards as required.

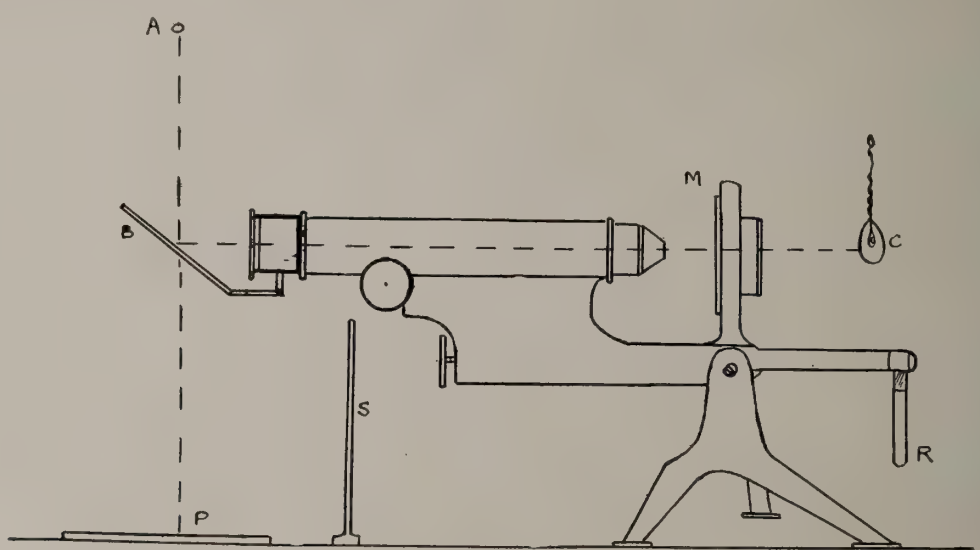


FIG. 5

For low powers an ordinary gas burner or incandescent lamp is sufficient, fixed behind the substage as in Fig. 5, while for higher powers a stronger light may be used. The fibre appears on the ground glass at the back of the camera, and is then carefully focussed. The rest of the process is simple enough, though considerable practice is necessary to give the best results, and to ensure that the most prominent features of the object are brought well into view.

Coniferous and Deciduous Woods.—The woods generally used for the manufacture of pulp are the conifers, such as pine and spruce, with the foliage-bearing trees such as poplar and aspen. The United States Department of Agriculture has recently examined very closely the question of using for pulp a much larger number of trees of both classes, so that it is no longer possible to

assume that sulphite pulp is made from spruce, that soda pulp is necessarily made from poplar, or that white mechanical pulp, more familiar in England, is aspen.

In fact, judging from the specimens produced, it is evident that many woods hitherto regarded as useless may eventually become important sources of pulp. Thus amongst the varieties with which these experiments were made, we find,

Foliage Woods.

Beech—*Fagus atropunicea.*
Cotton Gum—*Nyssa aquatica.*
Maple—*Acer rubrum.*
Sycamore—*Platanus occidentalis.*
Tulip—*Liriodendron tulipifera.*

Conifers.

Cypress—*Taxodium distichum.*
Hemlock—*Tsuga canadensis.*
Cedar—*Libocedrus decurrens.*
Jack Pine—*Pinus divaracata.*
Tamarack—*Larix laricina.*

This is merely a selection of those mentioned in the official report. It would have added immensely to the interest and technical value of the report had it been accompanied by a series of good microphotographs showing the distinctive features of the several wood fibres.

The pulps prepared from the two classes of wood are readily distinguished in that the conifers produce long flat ribbon shaped fibres, mainly tracheids, marked with peculiar circular or oval pitted vessels, the number, size and position of which serve to aid in the identification of the wood itself; while the foliage woods produce short slender cylindrical fibres of poor felting quality, with many separate vessels or cells of varying shape and size, distinctively marked and easily identified.

The special properties of these classes of pulp are well known from their types, the spruce and poplar respectively.

(To be continued.)

REPORTS OF W. C. EDWARDS CO. GOING INTO PAPER

(Special to the Pulp and Paper Magazine.)

Ottawa, May 13.—Great interest has greeted the announcement that the W. C. Edwards Co. would go into the paper business. Seen by your correspondent, however, Mr. Gordon C. Edwards, manager of the Rockliffe mills and a director of the company, stated that this was only a probable ultimate development of the company's activities so that the immediate entry of the Edwards firm into the pulp and paper field is not to be looked for. The announcement that it has even such an end in view is, however, important because of the extent of the Edwards interests. The W. C. Edwards Company is one of the largest lumber concerns in Canada, owning limits of great acreage on the Nation, Gatineau, Blanche and Coulonge rivers and in the Temiscaming district of Ontario, while allied companies hold much spruce in Quebec and New Brunswick. These allied companies are the Robinson-Edwards Lumber Co., of Burlington, Vt.; the Cascapedia Manufacturing and Lumber Co., the Bathurst Lumber Co., of Bathurst, N.B., and the Manufacturers' Lumber Co., of New York City, as well as the Library Bureau of Canada, Ltd.—Mac.

TARIFF BILL PASSED HOUSE

(Special to the Pulp and Paper Magazine.)

Washington, D.C., May 9, 1913.

By a vote of 281 to 139 at 6.10 p.m. last night, the Underwood Tariff Bill was passed by the House of Representatives. Final passage of the measure came after three roll calls and hours of weary parliamentary wrangling. Roll calls on ruling by Senator Clark that a motion of Representative Sereno Payne to recommit the bill with instructions to create a tariff commission was not germane to the bill, and another toll of names on Payne's motion to recommit the bill with the objectionable tariff commission feature eliminated preceded the crucial record.

With the bill now reported from the House to the Senate, the army of lobbyists which have been in this city for about four months have turned their attention to the Senate Finance Committee. The committee, divided into three sub-divisions, is considering the bill in secret, although it has become known that favored representatives of industries are permitted to interview members of these committees and impress trade views on them.

The Finance Committee as a whole will refuse to grant hearings on the bill, notwithstanding the fact that the Republican Senators will again make the request for hearings when the bill is referred to the Upper House. If hearings were granted it would be over a month before the Finance Committee could report back to the Senate. As it is it is not expected that the committee will be ready to report before June 1. The debate of the Senate may consume all of two months, making it well into August before the final passage of the bill is assured.

At least one feature of the fight in the Senate will be the Canadian reciprocity. Republicans will make an attempt to erase this law from the statute books. It is possible that the Senate Democrats will permit them to do this, but it will be certain to be lost in conference between the two houses.

Senators are coming into line with the desire of the Administration, and it is not expected that any material changes will be made in the Upper House. Nevertheless, it is contemplated that the bill will carry any number of changes in phraseology, and possible alterations in the income tax and the administrative features. The Senate always has considered itself as possessing a profounder intellect than the House and therefore it usually finds numerous changes necessary to any law proposed. —Meb.

WAREHOUSE AT EDMONTON

The Martin Paper Co., of Winnipeg, representing the J. R. Booth Mills, the Spanish River Mills, and Ritchie & Ramsay, Ltd., will establish a large wholesale warehouse in Edmonton. John Martin, who made the preliminary arrangements a few days ago, announces that orders have been placed with the mills and that the company will be in a position to begin deliveries before the end of May. Publishers and printing houses in Edmonton and the tributary country, he said, will be supplied with as modern service as Winnipeg or any other city in Western Canada. The company will carry sufficient stock to insure the users of paper against famine, such as has been experienced in Edmonton on several occasions during the last twelve months as a result of the rapid increase in business

MAKING OF KRAFT AND SULPHATE OF SODA PULP

By J. M. IVERSEN and A. V. TRACY-GOULD

The manufacture of sulphate of soda pulp or generally called the kraft pulp, has come to this country to stay; although very few plants are so far in existence, still the more the pulp and paper manufacturers will familiarize themselves with this kind of pulp, the more they will begin to appreciate the possibilities of same for manufacturing of different grades of paper. It always has been assumed on this continent that no other kind but wrapping can be commercially manufactured from this pulp. This is rather a wrong view. The best qualities of paper can be manufactured of sulphate of soda pulp and the cost compares very favorably with the best grade of sulphite.

No doubt, due to the fact that there are but a few experienced men in this country who thoroughly understand the process, it has been impossible to bring it to the notice of the manufacturers to the extent it deserves. The majority of pulp men in Canada and United States are ground wood pulp or sulphite pulp men, and therefore it is natural that those two systems are most widely known and used. Looking over the literature of pulp making, we find lengthy articles on sulphite, soda and ground wood pulp, but hardly ever articles on sulphate of soda have come to our notice. This process is, so to speak, an unexplored field in this country and it is fitting that more attention be given it by pulp and paper men. We do not claim that the sulphate of soda pulp will quite replace the sulphite; but for finer grade of paper and for wrapping, it will undoubtedly force its way to the front.

There are many reasons why this will come to pass, chief amongst them being the economy in maintenance and lower overhead expenses, lower demand upon power and the adaptability of any kind of wood. The demand for paper of quality, that will stand all kinds of wear and tear, being at the same time durable, is enormous, and no pulp is more adapted for this than sulphate of soda.

Beside the best grades of paper that can and are being manufactured, imitation silk and other articles of commerce of unlimited variety, can be manufactured of this pulp at a lower cost than of sulphite. There is no doubt that in the case of sulphite there always remains a small quantity of acid in pulp, which cannot be washed out and which, in due time, has a deteriorating effect. This drawback does not exist with the sulphate of soda process.

Variety of Pulp Wood.

There has been considerable discussion as to what wood is the best for manufacturing of sulphate of soda pulp and what kind of timber generally can be used.

Spruce and the pine, in the order named, are, without doubt, the best; but at present where there is such a big demand for pulpwood, the other species of coniferous trees have been very much used and it has been found that the results are exceedingly satisfactory.

It is usually assumed by experience that the wood in the order named below is the order of preference for sulphate of soda pulp manufacture, either due to quality of the pulp derived from the wood or due to cost of manufacture: 1, spruce; 2, pine; 3, fir; 4, pitch pine; 5, hemlock.

It has been found by experience that the most economical length of pulpwood is 4ft., not less, as this gives considerably less waste in sawdust and slivers.

Logs of an average of 8in. diameter are regarded as having the most suitable fibres. Of course the difference in quality of fibres of 4in. or 12in. logs is very slight and practically should not be considered. The point that is to be more considered is the question of the quantity per cord, with the 8in. logs giving the largest cubic contents.

One of the most important items in getting the chips is to see to it that he chipers and crushers are properly arranged, so as to make them work uniformly, also the question of having the knives of the chippers properly adjusted and kept continually sharp, a matter that, in the majority of cases, is not paid sufficient attention to. The size of chips should not be less than 1 ⅛in.; the longer the chips are the less loss in length of fibre; but due to mechanical reasons it never has been attempted to make chips of greater length, in some solitary cases attempts have been made with 1¼in. chips, but found that the chipper knives could not perform a clean cut. Until such time as new mechanical schemes are devised to overcome the difficulty, chips of 1⅛in. maximum size will only be used.

After the chips have gone through the crusher they are passed over the screens which are arranged in such a way that they separate the chips from all slivers, large knots and sawdust. This residue should be used in keeping up the melting furnaces of the recovery plant, a cheap fuel under the circumstances for that plant. It is to be considered that it is of great importance that the chips are kept clean of all this residue and conveyed in that clean state to the digester bins. The less slivers and knots and sawdust is incorporated with the chips the better pulp is produced and less liquor required for dissolving.

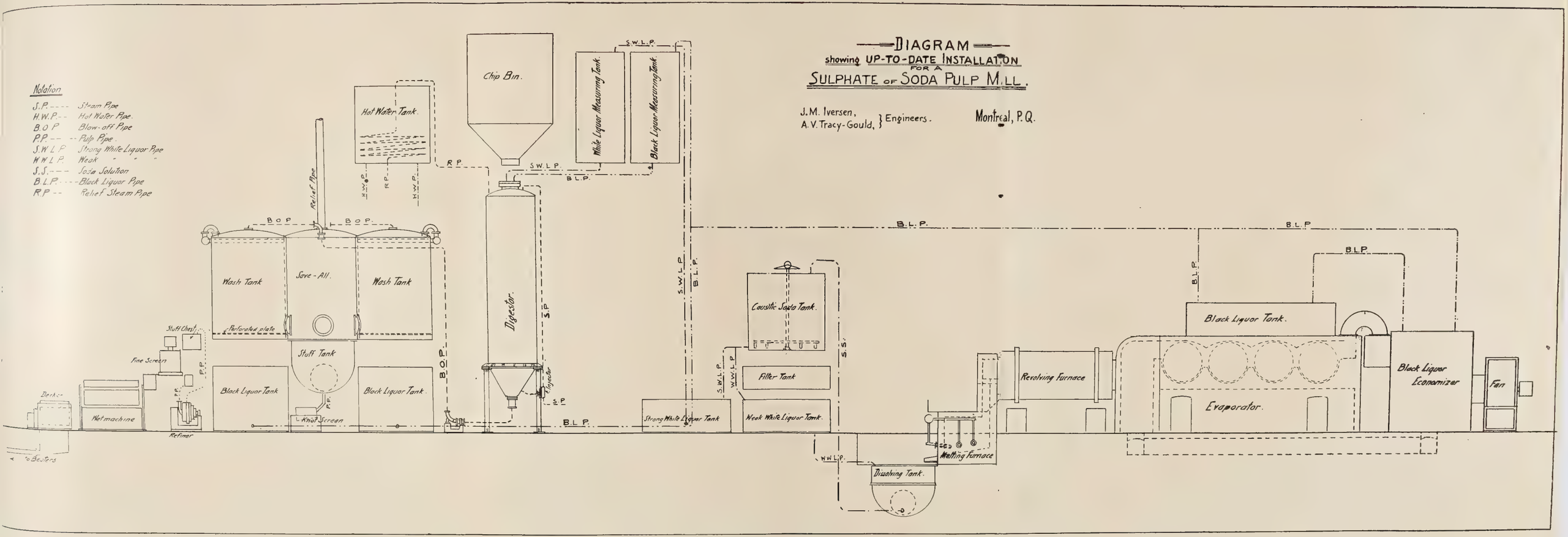
In the matter of cooking the chips in digesters, 18 hours is the usual length of time from the initial filling of the digesters to the blow-off. The boiler pressure has to be at least 125lbs. per square inch and superheated steam; in that state it is taken to the digester through the circulating injector, the man in charge being careful to see that all the cold condensed steam is run off continuously until the desired temperature is proportional to the pressure.

It usually takes three quarters of an hour to fill a five-ton digester with chips and liquor. The steam is then let in through the injectors and the digester is kept at about 80 pounds pressure, which is reached in about four hours after the superheated steam has been let in. The pressure of 80lbs. is kept up for about two hours, subject to the decision of the man in charge, and afterwards same is gradually reduced to about 60 pounds and kept at that pressure until blow-off.

The blow-off of pulp from the digester takes place through one main pipe only, which is so designed that it works on a swivel principle and can be connected on to each individual digester, if there are more than one.

This principle of using one blow-off pipe only has been introduced by Mr. Iversen and proven to work exceedingly satisfactory.

The opinions as to what kind of digester is to be recommended for sulphate of soda pulp are different; the majority of experienced pulp men prefer the stationary


DIAGRAM
showing UP-TO-DATE INSTALLATION
FOR A
SULPHATE of SODA PULP MILL.
J.M. Iversen,
A.V. Tracy-Gould, } Engineers.
Montreal, P.Q.
Notation
S.P. ---- Steam Pipe
H.W.P. -- Hot Water Pipe.
B.O.P. -- Blow-off Pipe
P.P. ---- Pulp Pipe.
S.W.L.P. Strong White Liquor Pipe
W.W.L.P. Weak " " "
S.S. ---- Soda Solution
B.L.P. --- Black Liquor Pipe
R.P. --- Relief Steam Pipe
Chip Bin.
White Liquor Measuring Tank.
Black Liquor Measuring Tank.
Hot Water Tank.
Relief Pipe
Digestor.
Wash Tank
Save-All.
Wash Tank
Perforated plate
Stuff Chest
Fine Screen
Stuff Tank
Deckers
Wet machine
Refiner
Black Liquor Tank
Black Liquor Tank
Knot Screen
To Beaters
Caustic Soda Tank.
Filter Tank
Strong White Liquor Tank
Weak White Liquor Tank.
Revolving Furnace
Melting Furnace
Dissolving Tank.
Black Liquor Tank.
Evaporator.
Black Liquor Economizer
Fan
B.O.P.
S.P.
R.P.
H.W.P.
S.W.L.P.
W.W.L.P.
B.L.P.
P.P.
S.S.

in preference to the revolving digesters. The point against the revolving digesters is the steam inlet and the connection to blow-off pipe. The steam inlet in this case, passing through the revolving tap, it supplies the superheated steam directly to the chips and this has the tendency to burn and discolor the fibre at the place of entrance. The revolving digester offers the difficulty of connecting one to the blow-off pipe; if the blow-off cock on digester is not brought exactly over the blow-off pipe, either another turn of the digester has to be performed, or in case of friction clutch same slowly released, which requires considerable time. The slightest difference in position of the flames prevents the connecting up of the cock and the blow-off pipe, also new packing has to be used each time the connecting-up takes place. A stationary digester offers the advantage of having the superheated steam passed first through the liquor by way of the injectors.

The usual capacity of revolving digesters is 2½ ton maximum; the capacity of stationary digesters are usually from 2½ to 5 tons. The latter capacity used mostly for larger plants. This capacity has been found to give the most satisfactory and most economical results as far as manufacturing of pulp, also installation and cost of plant, is concerned.

It has to be considered that digesters for pulp along the sulphate of soda process are not brick lined as in the case of digesters for sulphite. The soda not affecting the steel, it is left entirely unprotected, but these digesters have to be insulated properly on the outside just as in the case of boilers, to insure economy of steam consumption. The lining consists usually of an asbestos composition.

The cooked pulp and liquor is then blown off to the wash tanks, under a pressure of about 60 pounds, through a main pipe, which connects to a swivel pipe. These swivel pipes can be connected to pipes leading to the different wash tanks. Tanks to be water and air tight and have the pipe connection on the top of the tank. Besides the wash tanks, there is a tank installed, called commonly the save-all. This tank is connected on to the wash tanks by means of large suction pipes, which perform the duty of conveying off steam from the individual wash tanks; as the steam carries with it a quantity of pulp particles, these are deposited in the save-all tank, the condensed steam is either taken through the condenser to the hot water tank or allowed to escape through a relief pipe. The total capacity of the wash tanks should be the capacity of digesters plus 60 per cent. and not less.

These tanks are provided with a spray pipe placed underneath the covering, same is circular and connected to a pipe which leads to the hot water tank, 125° Fahrenheit is the average temperature of the water.

The wash tanks are provided with a perforated galvanized steel plate, the perforations to be preferably of conical section and placed about one foot above the bottom of the tank. The hot water from the hot water tank is let in and by its own weight forces the liquor, which was blown off together with pulp, into the wash tanks, through the perforated plates to the bottom of the tank. After the tank is filled with water the supply is shut off and the pulp regarded as washed. The accumulated liquor at the bottom of the tank is forced to the next tank and enters at the top, replacing the liquor which the pulp of this tank is mixed with, this replaced liquor being forced on the same principle to the third tank. The washing process starts in tank number 2 the same way as in tank number 1. From the third tank the liquor is conducted to a liquor storage tank.

The hot water tank is placed above the digesters, near the bottom of the tank a spiral pipe is placed, which acts as a water heater. Steam from the blow-off of the digesters, from high to low pressure, is used for heating the water, also all condensed steam from save-all tank is pumped to this tank. Before the condensed steam is led off from the spiral pipes to the save-all, the turpentine should be removed, as it forms quite an important item of by-products in sulphate of soda pulp manufacture.

The liquor used in cooking at the digesters, by dissolving the tar in the chips becomes black and is conducted to the wash tanks and then let off to a tank below the wash tanks, hence the name of black liquor storage tank.

The washed pulp is dumped into a tank located underneath and to the side of the wash tank through a side opening. The tank is half circular and has an agitator for the purpose of mixing the stuff by having cold water added to same to attain a uniform and thin consistency. From the stuff tanks the pulp is passed through a knot screen to remove all the big knots which the liquor was unable to dissolve.

After pasing through the screening process it is forced to a storage trough, where it is further diluted, after which it is conveyed to finer screens, which separate the rougher fibres and convey the finer fibre to the decker or wet machines, and from the deckers to storage chest, then to kollergangs or beaters.

The rougher fibres are treated in refiners and returned to the screens, from which it passes through the same process as stated above regarding finer fibre. So far the description has dealt purely with the mechanical end and the different stages of transition of the wood pulp.

We will now deal with the chemical side of kraft pulp making.

Referring to chemical solutions used, we have mentioned the white and black liquor. We shall describe what is understood by white liquor and its chemical composition. The white liquor is composed of sodium sulphate, commonly called salt cake, which, dissolved in proper proportion, mixed with solution of chloride of lime, composes caustic soda. Roughly, the proportion is 75% of salt cake and 25% of lime. This solution acts as the agent in dissolving the wood chips into fibres and ultimately into pulp.

Since it would be commercially impossible to manufacture pulp on this principle without resorting to means of recovery of this main chemical, apparatus is installed to recover the soda from the liquor.

The white liquor, acting upon chips in course of cooking, combines itself with the tar of the chips, passes to the wash tank and from these is forced to a storage tank, from which it is pumped to the measuring tank, as previously mentioned, located above the digester, and used over again in digestors in proportional measures with white liquor for cooking. This liquor being of dark brown color, the name of black liquor has been applied to it. About 80% of this solution is passed through a process of elimination of all the impurities and leading to the recovery of soda. This liquor is passed from the storage tanks to an economizer, which evaporates part of the water in the black liquor, and is then let into a storage tank located above the evaporating plant. This plant consists of wheels with discs arranged in such a way that they shape themselves like the thread of a screw.

They are placed one behind the other in circular troughs, which are connected by a channel. These wheels are right and left and when placing them into troughs care should be exercised that a left make wheel should follow a right make wheel or vice versa. The liquor, after passing through the economizer and stored in storage tank, just mentioned, is conveyed into the troughs of the evaporating plant. The disc wheels keep the liquor continuously moving and so assist in evaporating part of the water contained in same. The heat required for evaporating is the over supply of heat from the melting furnace, which will be described in due course. After the liquor in the evaporating plant has acquired a certain thickness, approximately the thickness of linseed oil, it is run off by means of pipes into a revolving furnace, where it is again exposed to the over supply of heat from the melting furnace and by this means all the water is evaporated from the substance. Since the opening of the revolving furnace at the evaporating plant is smaller in diameter than at the end next to melting furnace, all the substance from which water has been evaporated overruns the larger opening and deposits itself on top of the melting furnace in the shape of clumps and ashes; this substance is of black color containing tar and wood size, and is commonly called the black ash.

It is well mixed with a certain quantity of saltcake and deposited in a hot melting furnace, where it is gradually exposed to a high temperature reaching 3,000° Fahrenheit, this temperature is reached by means of forced air draft.

This attained heat meets the black ash, and purifies the soda from all tar, wood size and other impurities. The melted soda is run off into a tank, placed below the furnace, which is filled with hot water, where it dissolves. This tank also receives the weak white liquor, which will be described later on. To help to dissolve the melted soda and to keep the solution uniform, agitators in shape of propellers are continuously keeping the solution in motion. To prevent undissolved particles of soda from reaching the pump a screen is placed about 2½ feet from the outlet at the tank.

The tank is covered with a cover plate, having sufficiently large opening to allow the melted soda to run into the tank. This cover is for the purpose of preventing the solution in the tank splashing over the sides, which is apt to happen due to the difference in temperature of melted soda and water. The steam generated by the mixing of the melted soda is carried off through a stack out to the air.

The soda solution is forced, by means of a force pump, to the caustic soda tank. Special open steel bar baskets are suspended on the inside of the tank which are filled with lime. This gradually dissolves in the soda solution and to hasten the mixture and make same uniform agitators are installed, which keep the liquid continuously in motion. While the mixing is taking place, temperature of same is kept close to the boiling point. After thorough mixing the agitators are stopped and the solution called strong white liquor is allowed to stand until all undissolved particles of lime and impurities have settled at the bottom of the tank; then the clear liquor is drained off to a storage tank, placed below and to the side or the caustic soda tank.

After all the liquor has been drained off the caustic soda tanks are filled with water, the agitators started again; after the rest of the lime has been dissolved, the agitators are brought to stop again, the solution allowed to stand to clear and this weak caustic soda solution is drained off to a tank, placed underneath.

The process is followed up twice or three times and the weak caustic soda solution obtained drained off to the same storage tank.

By then all the strength has been taken out of the lime, the remaining lime and stone and impurities are removed from the tank by means of a valve placed at the bottom of the tank. These undissolved particles drop down into the filter tank and there they remain until all moisture has drained off and all slack lime, sand and other impurities have dried; they are then removed as being of no further value to the mill.

In a mill of large capacity it would be advisable to burn the slack lime and use same over again for the purpose of making caustic soda.

The weak white liquor, which is obtained as stated before, from the second and succeeding wash, is then run off into the dissolving tank at the recovery plant, there to be mixed with the melted soda from the melting furnace.

Regarding the recovery of soda from the black liquor, experience has shown that about 90% of soda of the sodium of (sulphate salt cake) used, can be recovered, the loss amounting practically to 10% only; this loss has to be made up by adding the necessary quantity of salt cake to the black ash in the melting furnace, as stated before. Good quality of salt cake contains only 3% of impurities. Care has to be taken that the salt cake is kept perfectly dry in storage and that it is always kept in powder form; any moisture tends to cake the powder, which is very hard and difficult to break up, and before it ever reaches the melting furnace these cakes have to be pulverized.

With regard to lime, care also has to be exercised that it is kept in a perfectly dry condition; no large quantities should be stored, as the exposure to air, which contains certain moisture, slacks and therefore reduces its strength, and lime stored a certain length of time will lose its original strength to such an extent, that double the quantity has very often to be used in the process.

The liquor of the sulphate of soda process in the manufacture of kraft pulp is the only known agency which readily dissolves the bark, and small knots. There is no necessity of installing barkers as in the case of unbleached sulphite, soda and ground wood pulp. This of course applies to kraft pulp, but in the case of bleached sulphate of soda pulp, barkers have to be installed.

Sulphate of soda pulp can be manufactured for the highest grade of bleached pulp. Bleached sulphate of soda pulp is of higher quality, as far as strength is concerned, then bleached sulphite pulp.

After being turned into finer grade of paper, such as bond, money paper, etc., it retains its uniform strength under all conditions, never breaking, and even if exposed to air and sunlight does not turn yellow, as the case is of paper made of bleached sulphite. Where strength, durability and color retaining qualities are concerned, paper made of sulphate of soda pulp is far superior to any kind of other pulp, except rag pulp, which stands on same level of quality.

Ground wood pulp, mixed with bleached sulphate of soda pulp, in lesser quantity than that required with sulphite can be manufactured in the best quality of book paper.

The bleached sulphate of soda pulp can be manufactured cheaper by at least 10% than the high grade sulphite pulp.

In regard to initial cost of installation of a sulphate of soda pulp mill, same is about 25 to 30% higher, than

the cost of installation for equal capacity of a sulphite mill, but considering that no acids are used in the process, therefore all piping, tanks, etc., are made of steel or iron, and no brick lining of digesters is necessary, the cost of maintenance of such a plant is reduced to a minimum, which compared to the expenditures on maintenance of a sulphite plant of equal capacity, shows up very favorably, and in course of a few years easily equalizes the expenditure and proves to be more economical in the course of years.

Pulp and paper manufacturers will do well to consider the sulphate of soda process. There is no doubt that, sooner or later, it will play an important factor in paper industry of finer grade of paper where durability and retaining qualities are regarded as primary requirements.

FROM MONTREAL

(Special to the Pulp and Paper Magazine.)

Montreal, May 13, 1913.

That the pulp and paper industry throughout the Province of Quebec and Eastern Canada generally is in a healthy condition, is shown by the reports from various mill centres of changes, enlargements and other evidences of prosperity. In brief, the pulp and paper industry is becoming one of the most important in this Province, and is receiving a great deal more publicity and attention from business men than was the case a few years ago.

The Public Utilities Commission of this Province who were responsible for much of the activity shown by the Provincial Government in the matter of safeguarding the forests, have just made two further appointments of locomotive inspectors. There is now a staff of some half-dozen inspectors operating under Mr. C. J. Hall, all of which are joint appointees of the Dominion Board of Railway Commissioners and the Public Utilities Commission, which gives them jurisdiction over both Dominion and Provincial railways. These half-dozen locomotive inspectors are making plans, which they hope will eliminate all danger of forest fires caused by locomotives. They will patrol all the Dominion and Provincial railways in this Province, enforcing the orders of the Public Utilities Commission and seeing that proper appliances are used for the prevention of forest fires. In this matter, it is only fair to state that the majority of the railroads are heartily in sympathy, and are co-operating with the inspectors in every possible way.

Despatches from Quebec state that a new trial has been ordered in the case of the Chicoutimi Pulp Company vs. William Price. The case was the result of a letter published in a number of papers in this Province some nine years ago, when Mr. Price over his own signature, made the statement that the Chicoutimi Pulp Company claimed ownership of properties at Chicoutimi that it did not legally own, but was given property right by an Act passed by the Quebec Legislature. The chief argument used by the Chicoutimi Pulp Company to cancel the judgment of Judge Dorien in the Supreme Court, after a lengthy trial by jury, which rendered an unanimous verdict in favor of Mr. Price, was the remark made by the Judge in putting the case to the jury, which was to the effect that the jury could eliminate the evidence of Hon. N. Gerneau, president of the Chicoutimi Pulp Company, when considering their verdict.

At Richmond in the Eastern Townships, the Canada Paper Company have purchased the power development formerly owned by Mr. John R. Hall. The Canada Paper Company have also purchased from Messrs. Tobin McRae and Begin the power site known as Kingsey Falls on the St. Francis River. The two are capable of generating 100 h.p. This will be transmitted to Windsor Mills and be used by the Canada Paper Company. New dams are to be built by the Canada Paper Company during the summer, which will involve the expenditure of several thousand dollars. A report from St. Rose, Dorchester County, states that 10,000 cords of pulpwood stored in the Quebec Central Railroad yards, were destroyed by fire. The pulpwood was the property of the Quebec and St. Maurice Industrial Company.

The Labrador Pulp and Paper Company, according to Mr. H. R. Reid, the vice-president, has now two large sawmills at work at Hamilton Inlet on the Labrador Coast, and has started work on a new pulp mill, which is to have a yearly capacity of 90,000 tons. They are also planning to erect another mill at Sandwich Bay, with a capacity of 50,000 tons. The output of both mills is already contracted for, the British Wallpaper Company taking the largest portion of the output.

The Albert Reed Company, of London, England, have just purchased the Mirimichi Pulp & Paper Company at Chatham, New Brunswick, after it has been idle for some years. The Albert Reed Company also own another pulp mill on the Mirimichi River, as well as mills in Newfoundland and in Great Britain. It is expected that the recently purchased mill will immediately start in operation, as with the ownership of the mill goes the possession of valuable pulp and timber areas. It is expected that upwards of 2,500 men will be engaged in the lumber and pulp industry on the Mirimichi River this year.—R.

RECIPROCAL DEMURRAGE

(Special to the Pulp and Paper Magazine.)

Ottawa, May 14.—The adoption of reciprocal demurrage, the system of fining the railway as well as the shipper for delay in the delivery and unloading of cars, which has been strongly advocated by pulp and paper interests, will be thrashed out between the railways, shippers, and railway commission at a sitting of the latter body to be held in Ottawa on the 20th. Average demurrage will also be discussed. This is a distinctly new feature in Canada, though it has been in force with success for some time in the United States. It is a form of reciprocal demurrage which may be adopted by any shipped and by which the charge on all cars held for loading or unloading by the shipper or receiver shall be computed on a basis of the average time of detention of all such cars released during each month. Each car released in the first twenty-four hours of free time will be credited one day and each twenty-four hours of detention beyond the first forty-eight hours of free time will be debited. At the end of the month $1 per day will be charged for the difference between the two.—Mac.

Toronto capitalists have completed arrangements for a 75-ton bleached sulphite mill on the Grand Trunk Pacific, some 30 miles west of Cochrane, Ontario. The company have 30,000 h.p. available, and are planning to build one of the most up-to-date sulphite mills in the country.

TESTING TALC FOR PAPER SIZING

Talc, a hydrated silicate of magnesia, is used by paper makers in large quantities as a filling material. This use of talc is continually increasing.

Despite its many advantages over other fillings, talc has not succeeded in replacing them entirely, mainly on account of the prevalent practice of adultering it with large quantities of chalk, which make it quite unsuitable for paper-makers' use. It is not uncommon for commercial talc to contain 80 per cent. of the carbonate. It is rather adulterated chalk than adulterated talc. Cases have been met with in which mere chalk or gysum has been sold as talc.

It is a remarkable fact that laboratory analyses of talc for carbonate of lime have given widely different results with the same sample. Many paper-mill laboratories proceed as follows: One gramme of the "talc" is boiled for half an hour with 110—150 cc. of distilled water and 50 cc. of hydrochloric acid (SG 1.12). The filtered residue is washed, dried and weighed, and the loss is put down to carbonate of lime. This method is worthless, as chloride of magnesium is lost in the filtrate, and the residue is not purified talc, but a mixture of a little undecomposed talc and hydrated silica. The residue will therefore weigh less than a gramme, even if the original talc was free from admixture of any kind. The following method is recommended by Drs. Wittels and Welwart at their public chemico-microscopical laboratory at Vienna.

The sample having been dried at 120 degrees C., one gramme of it is put into beaker with 200 cc. of distilled water, and exactly 2.5 cc. of hydrochloric acid (1.12) are added. The contents of the beaker are then gently boiled for 1520 minutes. The insoluble residue is collected on a tared filter. In this case, any loss of weight does denote approximately the quantity of carbonate of lime in the talc. The amount of hydrochloric acid above stated must be enough, as it will dissolve one gramme of carbonate of lime, and the small excess has no action on the hydarted magnesium silicate, especially as it is very dilute. The following table should be convincing, and was compiled from the results of the analysis of 50 talcs, all containing known and different quantities of carbonate of lime.

No. of Sample	Per cent of Ca Co3 actual present	Per cent. of Ca Co3 as determined by the new process with weak acid 2·5 c.c. in 200 c.c.	per cent. of Ca Co3 as determined by the old process with strong acid, 2·5 c.c. in 5-7½ c.c.
1	1.19	1.64	18.12
2	0.88	1.06	20.10
3	2.94	3.36	16.40
4	3.71	3.92	24.15
5	2.75	3.09	22.87
6	4.12	4.46	29.31
7	3.40	3.69	22.73
8	4.82	5.16	31.76
9	5.56	5.89	28.44
10	2.10	2.58	24.49

The filtrate obtained in working the Wittels-Welwart process can, of course, serve for an exact quantitative determination of the calcium carbonate, the lime of which is then in solution, as calcium chloride. More hydrochloric acid is added, and it is then made alkaline with ammonia. This throws down traces of alumina and iron, the filtrate from which is precipitated with oxalate of ammonia. The oxalate of lime precipitated is decomposed by heat, and the carbonate of lime is weighed.

Most talc contains traces of alumina, iron and manganese, which must be first got rid of as above directed.

Now ,as regards a standard. It may be stated as established that talc to be fit for paper-making should not contain more than:

8 per cent. of carbonate of lime.
4-5 per cent. of alumina.
12 per cent. of ferrous oxide.
1 per cent. of manganeous oxide.

Many talcs purer than this are on the market, and many much less pure. The following table of 16 market sorts shows this with sufficient clearness. The first 11 can be passed for paper-making; the last six must be rejected. All the figures are percentages.

Ingredient.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Water.	1.84	2.12	3.16	1.96	2.34	2.61	averaging		about		2.00	1.32	2.12	1.84	1.64	2.16
Silica.	60.82	59.81	63.16	61.42	62.98	64.26	62.01	62.93	61.12	59.92	61.70	54.66	48.42	55.41	30.12	32.18
Magnesia.	35.28	35.16	29.60	36.72	32.33	30.88	30.66	24.96	30.32	27.08	32.96	21.58	17.84	23.82	15.13	15.94
Alumina.	0.84	1.15	0.92	1.46	0.98	1.19	1.40	3.16	2.14	1.38	0.62	1.84	2.16	0.92	0.34	0.76
Ferrous Oxide.	0.17	0.25	0.84	0.62	0.29	0.21	0.91	0.56	0.62	1.36	0.34	1.54	2.09	1.14	0.96	0.59
Manganeous Oxide . . .	0.03	0.06	0.20	0.15	0.08	0.05	0.13	0.06	0.21	0.34	0.03	0.16	0.26	0.09	0.04	0.12
Carbonate of Lime. . . .	0.84	1.12	1.55	2.17	0.66	0.49	2.53	1.42	3.16	7.40	2.10	18.48	26.44	36.26	50.79	47.69
Alkalis.	0.02	0.09	0.14	0.11	0.05	0.16	0.05	0.80	0.16	0.31	0.22	0.14	0.31	0.19	0.07	0.18

The full analysis was done as follows: One gramme in the finest possible powder was fused with an excess of sodiopotassie carbonate in a platinum crucible. The melt was dissolved in water, and the silica was removed from the solution by hydrochloric acid, iron, alumina, and manganese were thrown down with acetic acid and acetate of soda. The three metals are separated by the well-known methods by treating the washed and dried precipitate. In the filtrate from the heavy metals, the lime is thrown down with sal-ammoniac and carbonate of ammonia, the magnesia being precipitated from the filtrate from the lime-precipitate by means of phosphate of ammonia. Finally, potash and soda are estimated in the filtrate from the ammonia-magnesia phosphate.—Zentralblatt, in Paper Making.

FREE WOOD PULP TO UNITED STATES FROM EUROPEAN NATIONS

Washington, May 12.—The customs court to-day decided that European nations are entitled to the free entry of wood pulp and paper under the "most favored nation clause" of their commercial treaties with the United States, because the free entry privilege is granted to Canada under the only operative clause of the Canadian reciprocity agreement.

Mr. Arthur D. Huff has been appointed head of the department of transportation of the Laurentide Co., Limited, and has already taken over his work. He comes to the Laurentide Co. with wide experience in railway service, and will also handle the traffic department of the Belgo-Canadian Pulp and Paper Co.

UNITED STATES NOTES

(Special to the Pulp and Paper Magazine.)

The old Denver paper mills, at Denver, Col., are to be operated again shortly on a factory communal basis of which one part will be devoted to the manufacture of paper, with a daily output of about 35,000 pounds, according to the plans of the Denver Factories Company, which was incorporated on May 1. This new company will act as a holding company for the property, which includes three mills. The company plans to rent one of the mills to other parties for manufacturing purposes. The paper mill will utilize the waste paper of the city to make building paper and other paper products derived from waste materials. The machinery has already been ordered, and when in operation, the factory will employ about 100 hands. The mills have been inactive for about five years.

The J. L. N. Smythe Paper Company, of 507 Ludlow street, Philadelphia, Pa., has taken extensive new quarters at Vine and Lawrence streets, and will move there about May 15th.

About fifty girls employed on the plating machines at the Eastern Manufacturing Company's paper mill at South Brewer, Me., went on a strike on May 6 rather than begin work half an hour earlier in the mornings. The strike followed the announcement by the management that a time schedule formerly in use would be resumed.

Republican Bothfeld, of Newton, Mass., escorted Jas. R. Carter, of the special committee of the paper trade association, of Boston, to Washington, on May 5 to discover what has become of the bill to exempt the paper trade from the new act concerning selling things by weight. The paper trade at Boston has been warned by sealers of weights and measures that they must secure legislative action, and a bill has been drawn up to provide that the act shall not apply in the case of paper, etc., when the goods bear a label plainly stating that they are sold subject to the weight of the wrappings, twine, etc. Mr. Bothfeld discovered that the special bill is peacefully sleeping in the Senate rules committee, which had not met for a week.

F. W. Fletcher, head of the Alpena Power Company, Alpena, Mich., was fined $200 in the Circuit Court of that city on May 2 for refusing to turn on the power to operate the big paper and pulp mills of the Fletcher Paper Co. Judge Emerick had previously ordered him to do this, but he was persistent in refusing. Allan M. Fletcher, president of the Fletcher Paper Company, has petitioned the Michigan Railroad Commission to force the Alpena Power Company to furnish power under its charter. No date has been set for the hearing.

The West End Paper Company's mill at Carthage, which has been down since January 19 on account of a break in the flume caused by high water, was put into operation again last week. The loss occasioned by the damage to the flume and wheel pit amounted to about $12,000, not saying anything of the loss of business.

The annual meeting of the West End Paper Company was held in the offices of the company at Carthage, N.Y., on Tuesday last, May 13 at two o'clock in the afternoon.

A new paper company has been incorporated under the laws of the State of New York, under the name of the Beaver River Company. The charter calls for a capital of $300,000, and the company plans to deal in paper, pulp, lumber and electrical power. The incorporators include H. S. Lewis, M. F. Lewis and H. L. Van Arnum, all of Beaver Falls, N.Y.

The Standard Paper Manufacturing Company, of Richmond, Va., has opened an office in the Insurance Exchange Building, 175 West Jackson Boulevard, Chicago, Ill. The branch office will be in charge of Frank H. Preble, formerly connected with the Monarch Paper Company, of Kalamazoo, Mich.

According to information received by the United States Forestry Bureau at Washington, D.C., two American paper manufacturing companies have applied for the right to purchase 500,000,000 feet of timber in Alaska to be used in the manufacture of wood pulp. While the forestry department refuses to give out the names of the companies making the applications, it is said by an official of the Bureau that the applicants propose to erect two pulp manufacturing plants in that territory and to ship the pulp to the various paper mills in the United States.

Advices from Hamilton, Ohio, state that the Champion Coated Paper Company, has adjusted its fire loss with the New England Mutual Fire Insurance Company for $695,300—the entire amount of the company's policy on the coating mill, which was burned to the ground during the recent floods in Miami Valley. It was stated that this was done irrespective of the loss sustained by the flood waters, as it was apparent that the damage incurred to the company's plant was greatly in excess of that insurance. The insurance company, after investigation, willingly allowed the claim.

The American Strawboard Company has instituted a suit against the United Boxboard Company to recover the loss sustained in the securities of the former company by the reorganization of the latter concern. Officials of the American Company refuse to discuss the matter, but it is understood from good authority that the bonds held by the depository stockholders had depreciated about $900 on each $1,000 bond. The suit is understood to be for $1,000,000.

Maine paper manufacturers will be interested in the practical study of the growth of woods suitable for paper making which is to be undertaken at the state college of forestry at Syracuse, N. Y. The college plans to make a series of field studies which will show the rate of growth of our various paper woods, and finally, in the case of Norway spruce for example, the growth rate in plantations. The study is to be made along forestry lines with the idea of determining methods by which rate of growth can be increased and volume production enlarged, rather than to make a study of mill methods on a statistical study of production. Mechanical engineers and chemists are working constantly upon the improvement of mill methods and the government bureau of statistics has been making statistical studies, as has the college during the past summer in co-operation with the Untied States forest service. Therefore, the most urgent need at present seems to be a series of studies which will aid the timber owners to so handle their lands that the length of time necessary for the production of a paper bolt may be reduced and that a much larger volume return per acre may be gotten.

The Philadelphia Paper Trade Association has adopted a credit system, introduced by George W. Ward, of the Ward Paper Company, which will practically expel all bad accounts from the trade.

BRITISH TRADE NEWS

(Special to the Pulp and Paper Magazine.)

London, May 2, 1913.

Once more peace reigns supreme in the British paper industry, and, notwithstanding the recent disturbances, employment on the whole is satisfactory. There is no doubt the labour unrest in Lancashire last month looked very serious during one period of the crisis, because if the manufacturers had not arrived at some amicable arrangement with the employees and closed down the mills, as threatened, thousands of workers would have been thrown idle and the spirit of unrest would have permeated into other districts outside the Lancashire area. As things have turned out credit must be given the manufacturers for the way they have handled the strikers and their representatives, and it is hoped some definite agreement will be entered into shortly as regards working hours during the week-end and throughout the week generally. Messrs. Oliver and Partington were the first victims of the strike at their Glossop mill and they are now paying at the rate of time-and-a-half for week-end overtime. This is what the employees demanded, and the question has received the attention of the Northern Division of the Papermakers' Association, who met on April 22 to consider it with a view to making the rate general in the Lancashire district. No definite line of action has yet been announced by the association, but it is anticipated that a reply favourable to the workers will be given. The unfortunate thing about the Lancashire paper industry is that all round it exist textile and other mills in which the workers are slightly better off for working hours than those in the paper mills. Naturally the paper mill hands think they should be on the same footing as the spinners and the weavers, which is an impossibility, and this is one of the elements that the paper manufacturers are being harassed on indirectly. Canadian pulp is largely consumed in the Lancashire district and it is gratifying to know that all the mills were not closed down to affect the supply.

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The value of the form of the contract note adopted by the British Wood Pulp Association is borne out by a recent decision given in a court of arbitration by Mr. Maurice Hill, the well-known King's Counsel. It arose out of a case brought between Becker & Co., Ltd., of London, and the Norwegian firm of Akteselskabet Folla Traesliberi and the question the court was asked to decide was: What were the terms of the contract note entered into between the parties for the sale to Becker & Co., Ltd., of 3,000 tons of white mechanical pulp f.o.b. Follafos. The contract note was in the form as supplied by the British Wood Pulp Association which provides in clause 6 of the conditions that (except in cases of force majeure or disputed quality) where the buyers refuse to take delivery of pulp during the currency of the contract, the goods cannot afterwards be claimed. Under the contract a delivery was due to Becker & Co., Ltd., but the Folla Co. declined to carry out their part of the contract on the ground that Becker & Co., Ltd., had broken it by taking deliveries in February, April, and September instead of regualr monthly deliveries. The point, therefore, arose did Becker & Co., Ltd., commit a breach of clause 6. Mr. Maurice Hill has decided that Messrs. Becker were absolutely right and that there was a wrongful failure and refusal on the part of the Folla Company to deliver the pulp. Becker & Co., Ltd., were consequently entitled to damages and he fixed the amount the same as that claimed. This legal decision goes a long way to show the value of the legal form in which the British Wood Pulp Association contract note is prepared for its members, and when it can stand a test in an arbitration, it is sufficient to say that the Canadian Pulp and Paper Association might with advantage adopt with the same ingenious manner a contract note based on similar lines for the protection of Canadians.

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The Trade Board at Dublin (Ireland), has fixed for the paper box making trade a minimum rate of wages of 12 cents an hour for male workers, and a minimum rate for male learners under 15 years of age of one dollar eight cents a week based on a week of 52 hours. The rates come into force on June 6.

* * *

The London Times, which, by the way, has been reduced in cost to 4 cents a copy, mentions that inventors have been busy lately in devising special methods of purification for China Clay and some success has attended the process devised by Mr. W. J. Gee for the separation of solids suspended in liquids by means of centrifugal action. For this purpose the liquid containing the matters in suspension is passed through a rapidly rotating drum, whereby the solids are caused by centrifugal force to be deposited on a removable lining on the inner surface of the drum, whilst the water or other liquid passes away in a clarified condition. The essentially new feature here claimed is that a current of water is produced through the drum from end to end during the time that the machine is rotating, with the result that the solids are deposited in the order of their mass, the largest and heaviest near the inlet end and the finest and lightest at the outlet with every degree of fineness between the two extremes. China Clay requires careful preparation to free it from impurities, consisting of quartz, mica, silica, and undecomposed particles of the granite rock. In order to separate the fine unctuous clay from these substances, the clay is carefully washed, the coarser matters being allowed to settle out in the "mica drags" and the fine particles of clay, suspended in water are carried forward, passed through sieves of lawn, and finally enter large pits or tanks in which they settle. Cornwall clay is generally freed from its water by means of artificial heat in kilns, locally called "drys."

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Messrs. John Tod & Son, St. Leonard's Mill, Lasswade, Edinburgh, have registered their business as a private limited company with a capital of £25,000. They will be known in future as "John Tod & Sons, Ltd." The Arden Papermaking Co., Ltd., of Woodley, near Stockport, has been registered also as a private limited company with a capital of £30,000. The Forester Paper Co., Ltd., has been registered with a capital of £7,000 to carry on business as manufacturers and dealers in paper, stationery, etc., the registered office being 43, London Wall, London, E.C. John Hughes, Ltd., have been registered with £5,000 capital to take over the business of paper merchants carried on at Manchester as "John Hughes."

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Messrs. F. Reddaway & Co., Ltd., the well-known makers of deckle straps and rubber covered rollers, etc., of Pendleton, Manchester, have had a very successful

year in 1912. The profit, after making provision for bad debts, depreciation of investments and contingencies, amounts to £30,557, and the directors recommend a dividend of 3 per cent. on the preference shares. Messrs Reddaway's business and works extend to America and Russia and the firm enjoy an excellent reputation among the paper mill owners of the United Kingdom. Another successful concern in 1912 was Stora Kopparbergs Bergslags Aktiebolag, Ltd., London, who have paid 20 per cent., the same as the company in Sweden.

* * *

Afforestation is a question which is being seriously considered by the Government Department in London and some hints are being taken advantage of by the methods adopted in Canada. The Board of Agriculture issued a week ago a report on forestry and it recommends that a preliminary survey should be undertaken to ascertain where the land in this country is likely to prove suitable for afforestation purposes and where it is found that there is a sufficient area, a detailed survey should follow to obtain the particulars necessary to justify the State in acquiring, if possible, an area for an experimental forest containing not less than 5,000 acres. It is suggested that the forest of Dean, with the adjoining Crown Lands might be selected as a demonstrating forest. The amounts sanctioned up to the present to be advanced from the Development Fund for the purposes of forestry are £18,000 for England and Wales, £11,000 for Scotland, and £28,000 for Ireland, and no doubt advances from the fund could be obtained for approved schemes of afforestation. Grants have also been made for advisory work, minor forestry experiments, research, and similar purposes in England and Wales, and proposals of a like nature for Scotland are now under consideration. The Canadian Forestry Department might take a hint or two from the Board of Agriculture in London, which is becoming fully alive to the great use and advantages of the forests at their disposal.

COFFER DAM AT J. R. BOOTH'S GOES OUT

(Special to the Pulp and Paper Magazine.)

Ottawa, May 12.—One man, Romeo Champagne, of Hull, was drowned and J. R. Booth and twenty-five of his employes had a narrow escape with their lives last week when a coffer dam built across a log drive at the Booth plant collapsed under the pressure of the rising waters of the Ottawa river. Seven men were caught by the flood, but all with the exception of Champagne escaped.

The deceased and his fellow workers were working in the log drive building on the new boom at the time of the accident. For the past three or four days the coffer dam had been closely watched because the water in the river was rising, but it was considered safe as it was weighted down with tons of stone. When it gave way it did so without a moment's warning. Several of the men, including Mr. Booth, rushed for a ladder leading from the drive to the ground level when the crash of breaking timbers told them an accident had occurred, and got to safety not a moment too soon. Others clambered up ropes or got out of the excavated drive as best they could.

Romeo Champagne, with his brother George, Raoul Huneau, M. Girouard, X. Goulet, B. Garneau and P. Foucault were working close to the dam and had not time to get away before the water burst through. They were gathered up by the rushing water and carried through the drive. Goulet managed to catch hold of a rope attached to a winch on a platform several yards down from the dam, and by this pulled himself out. Huneau, George Champagne, and Foucault saved themselves by grabbing the edge of the wooden bridge or roadway over the drive about fifty yards from the dam. Girouard and Garneau were carried with logs and other material under the bridge and were rescued by men who tore up the planks without delay and pulled them out. They were badly injured about the chest. Champagne's body has since been recovered.

When the dam burst the water flooded out all the paper machines, forcing the paper mills to close down. The entire plant had to shut down during the night and some 2,000 men were out of work for nearly a week. The Booth firm has issued a statement in which they say the coffer dam was very strongly built.—Mac.

OCEAN FALLS CLOSES DOWN

(Special to the Pulp and Paper Magazine.)

Vancouver, B.C., May 8.—By order of the debenture holders in England, the entire plant of the Ocean Falls Co. has been shut down and the staff of 400 workmen paid off. The only men now engaged at the big plant at Ocean Falls, B.C., is a temporary gang of 25 who are engaged in coating the machines with anti-rusting preparations, and in building covers for the outside plant to protect it from the weather. It is understood that the plant will not start up again until all the litigation caused by the company's financial difficulties and attempts to reorganize have been settled.

The decision to close down the plant was made upon receipt in England of the news that an attack was being made upon the validity of the debenture issues for $3,500,000, and upon the trust deed given to protect the debenture holders. For some months the debenture holders in England had been supplying funds to keep the company going until the pulp mill was in operation, but on learning of the attack on the validity of the debentures, they decided to cease further contributions and promptly cabled to the trustee in charge to close down the plant and pay off all the men.

Great regret was caused to the staff at Ocean Falls by this unexpected decision, as the plant for the production of pulp, with an estimated capacity of 150 tons of dry pulp per day has just been completed, and preparations were in hand to start operations in the mill. The lumber mill, which has been producing 350,000 feet of lumber per day was also closed down.

Argument on the questions of law involved in the proposals to reorganize are to be heard in the Supreme Court this week, but how long they will take to decide is hard to estimate. It would be possible to keep the issues before the Appeal Courts for a year or more. The minority who are fighting the proposals of the company to reorganize, represent but $30,000 or so out of a total list of creditors for $320,000, and all have their headquarters to the south of the boundary line. Rather than pay them off or give them a preference over the local creditors in the liquidation and reorganization, the debenture holders who are at present in control of the company, have apparently decided to fight the issues out by closing down the entire plant and awaiting eventualities.—J. S. C.

POWELL RIVER

(Special to the Pulp and Paper Magazine.)

Vancouver, May 10.—"We have contracts on hand for the entire product of the Powell River Co.'s paper and pulp for the next twelve months," announced President D. F. Brooks, of the Powell River Co., Limited, on his return to Vancouver to-day from a visit of inspection to the company's plant. Accompanying Mr. Brooks was Mr. Harry E. Gibson, a director of the company, like President Brooks, a resident of St. Paul, Minnesota. This company which started with a capitalization of $3,000,000 found its output of newsprint contracted for by the coast papers for five years ahead, before ever a machine was working in the mill. Under the circumstances the capacity of the plant was enlarged threefold, and the company recently reorganized with a capital of $9,000,000.

President Brooks intimated that the directors are contemplating a further increase of the company's capital to $10,000,000 in order to provide funds for a new sawmill and shingle mill in order to deal with the company's by-products. At present the company is manufacturing newsprint exclusively, having an output of 150 tons of newsprint per day with the enlarged plant, which is now in operation. It is proposed also to consider the building of a smaller mill for the manufacture of the finer grades of paper, for which Mr. Brooks believes there is a good market.

Discussing the question of re-forestration, Mr. Harry E. Gibson stated that the rapid growth of timber on the west coast led him to believe that the company's limits would re-stock themselves at an equal pace with the amount of timber cut. He pointed out that the greatest danger to the limits was not to be feared from the amount of the cut, but from the possibility of loss by fire, the fire loss in the province each year being far in excess of the amount of the cut. To-day at Victoria the provincial cabinet appointed about fifty deputy fire-wardens in charge of districts, under the recent reorganization of the Forest Fires Protection Service. Six additional launches are under construction for the use of the wardens, and a telephone system extending from Campbell River to Alert Bay is being planned. The line will connect with the Dominion Government line, and the private line of the Powell River Co., on the mainland, and with the Strathcona Park line and the B. C. Telephone Co.'s line on Vancouver Island. With the completion of the line this summer a vast area of pulp and timber reserves will be linked up with the big circuit around the Gulf of Georgia, and will have direct communication with Seattle, Victoria, and Vancouver.—J. S. C.

MONTREAL NOTES

(Special to the Pulp and Paper Magazine.)

Montreal, May 13, 1913.

Howard Smith's writing paper mill at Beauharnois is expected to start operations next week. This mill has specialized in loft dried writing papers, and will commence with one machine, although ultimately they expect to have four machines in operation.

The Riordon Pulp and Paper Company now have their second digester going at Hawkesbury, Ont. Mr. Carl Riordan, managing director of this company, and Mr. Charles A. Read, secretary-treasurer, sailed on the Victorian for England on Friday the 9th inst.

It is reported here on good authority that the Albert E. Reed Company, of London, have purchased the Miramichi Paper Co.'s pulp mill for the sake of the limits. They do not intend to operate the sulphite mill at the present itme, but will cut over the limits.

The Canadian pulp and paper men are following with the closest possible attention the tariff controversy in Washington. The remarks of Mr. Hammond, of Minnesota, were frequently commented on during the past few days. Speaking at Washington, in reply to Mr. Mann, Mr. Hammond said: "We have to look to Canada for paper and have to treat that country well or our paper will cost us a good deal more than it does at the present time. We are at the mercy of Canada in regard to paper." Despite this assertion on the part of Mr. Hammond, it is pointed out by Canadian paper men that the American Congress have put a retaliatory duty on chemical sulphite, and this is apt to arouse the Canadian people to adopt retaliatory measures. It is believed here that the Senate Committee will remove this discriminatory measure against Canada. There is no doubt but it has created a bad impression among Canadian pulp and paper men, and is a measure which is apt to arouse Canadians to adopt arbitrary measures in their dealings with the Americans. It is pointed out that the Americans now secure one million cords of wood every year from this country free of all restrictions. If the United States persist in keeping the objectionable duty on chemical sulphite it would not be at all surprising if Canada passed some restrictions in regard to private lands wood. However, it is felt that the good judgment of the Senate will prevail and that the measure will be removed.

PRICE BROTHERS' PLANS.

In connection with the retirement of Mr. O. A. Porritt, from the management of Price Brothers and Co.'s Kenogami Paper Mills, it is understood that the management of the manufacturing end of the plant itself will be in the hands of Mr. W. D. Gregor, the general superintendent. Mr. Gregor was formerly general superintendent of the Oxford Paper Co., at Rumford Falls, Me., and came to Canada about a year ago to take charge of these new mills. He is a man of the widest paper mill experience and of a pleasing personality.

The executive and business administration will be in the hands of Mr. J. M. McCarthy, one of the directors, who will have his office in Quebec. Mr. McCarthy, who was formerly interested in the Jacques Cartier Power Co., is an engineer of good training and wide executive experience.

The sales and purchasing departments have already been moved to the head office at Quebec, under W. S. Boyd and E. H. Judge respectively.

LOCATING AT EDMONTON

James W. Simpson, of Worcester, Mass., was in Edmonton, April 16, looking over the situation with a view to establishing a paper and strawboard plant, costing between $200,000 and $250,000. He will visit the foot hill and north country to ascertain the available supply of pulp wood. The plant, if established, will be located in the northern part of the city.

BROMPTON PULP AND PAPER CO., LIMITED

In the extent of its operations and the progressiveness of its business policy the Brompton Pulp and Paper Company holds a leading place among the companies which are to-day engaged in the development of the woodland assets of Quebec Province.

The History.

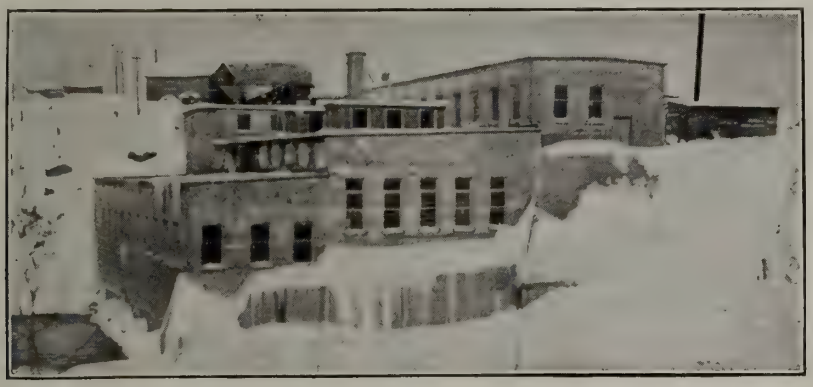
It was back in 1898 that Mr. E. W. Tobin, of Bromptonville, now Parliamentary representative of Richmond and Wolfe, conceived the idea of a pulp mill at Bromptonville. He interested Messrs. George B. Bearce, C. C. Wilson, and W. N. Munroe, of Lewiston, shareholders of the Odell Manufacturing Company at Groveton, N.H., and Mr. E. P. Lindsay, of Boston, who associated themselves with the enterprise. The Brompton Pulp and Paper Company was organized.

The First Construction.

A fine power just below the village of Bromptonville was developed; a pulp mill erected and fourteen grinders installed; also the layout for a paper mill was provided. Limits further up the river were acquired and the mill was run at full capacity from the beginning. It soon became apparent that an extension of the plant was necessary, and two years later the Brompton plant was enlarged by the installation of seven more grinders. It is, therefore, now operated as a 21 grinder mill, making ground wood pulp, and with a full head of water has a capacity of 140 tons per day. During the year 1910 it produced 30,000 tons. The report of the Canadian Pulp Association last year, showed this mill to be the third largest producer in Canada. About 120 hands are employed at this mill.

The Bromptonville Power.

The company figures that it has for its purposes here 10,000 h.p. for six months of the year it actually figures this. Back of the Bromptonville power is not only the St. Francis River, but the Magog River as well which joins the St. Francis at Sherbrooke, and also the Massawippi which unites at Lennoxville.



The Bromptonville power is capable of considerable additional development. This will be accomplished either by another dam a little higher up the river or by raising the present dam some twelve feet. This latter is the more likely proposition, and when carried into effect will increase the present development power by at least one-third.

The East Angus Plant.

The Bromptonville mill is the smaller portion of the Brompton Pulp and Paper Company's operations.



In May, 1907, the company purchased the mills and limits of the Royal Paper Mills Company, at East Angus, on the St. Francis River, sixteen miles above Sherbrooke.

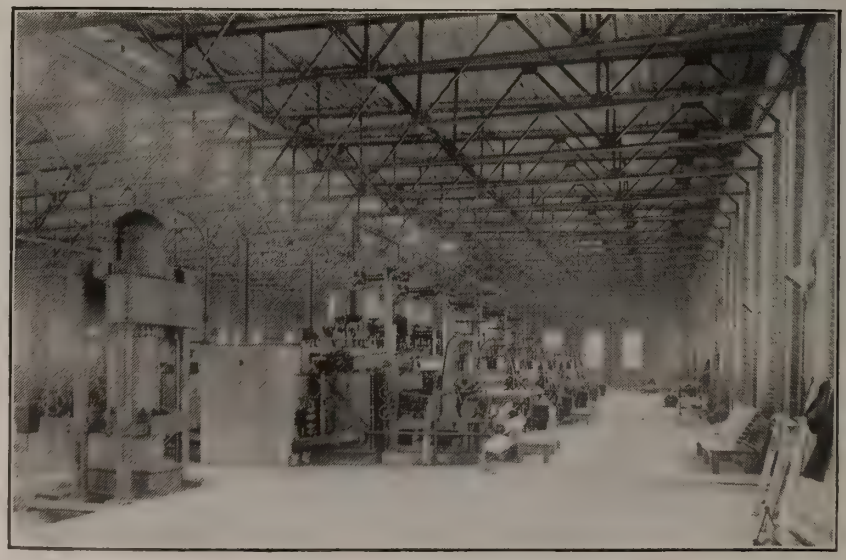
It was at this time that Mr. F. N. McCrea, the present head of the company, became interested, taking a large holding.

The developments, improvements, and extension of the East Angus property have been a feature of the company's recent operations.

Brompton Pulp and Paper Co. Ltd.







The Brompton Pulp and Paper Company is now organized as follows: President, F. N. McCrea, Sherbrooke; treasurer, W. N. Munroe, Lewiston, Me.; general manager, J. A. Bothwell, East Angus, Que. The directors of the company are: E. W. Tobin, M.P., Bromptonville; E. P. Lindsay, Boston; C. C. Wilson, Lewiston; H. E. Munroe, Lewiston; W. J. Pennell, Lewiston.

The East Angus plant consists of paper mill, sulphate pulp mill, ground wood pulp mill and sawmill.

The Paper Mill.

The paper mill has undergone important changes and improvements since it came into the hands of the present company. It has two paper machines 84-inch and 96-inch, with a capacity of about 30 tons of Kraft paper per day. This Kraft has gained wide reputation because of its fine quality, giving the maximum of strength per pound weight, and the best finish. The mill is operated at full capacity and consumes a large portion of the product of the adjacent pulp mill.

The Sulphate Mill.

When the Brompton Pulp and Paper Company purchased the property, this mill was operated as a soda pulp mill, but they changed it to a sulphate mill, the first of the kind in America. The plant was practically rebuilt, and has been running on the sulphate process for over three years. Its capacity is sixty tons per day, with six digesters. As stated above, a good portion of this pulp is used in the paper mill, the balance is shipped to United States and other parts of Canada.

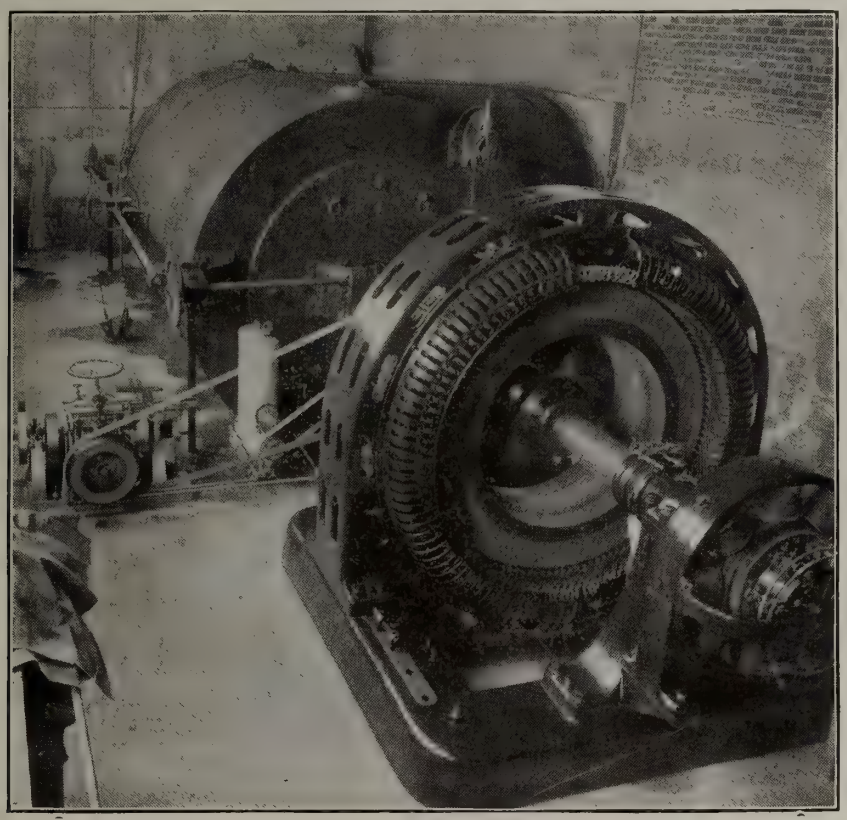
The Sawmill.

In the vicinity of the paper and pulp mills is located the company's sawmill, the output of which is some 7,000,000 feet annually in dimension lumber, shingles, clapboards, etc., 2,000,000 feet of this is hardwood for the English market.

These three plants are operated on the company's lower power at East Angus, where about 3,000 h.p. is available.

The New Dam and Plant.

In May, 1912, the company began the construction of a new ground wood pulp mill, three-quarters of a mile up the river, at a magnificent power, which had already been partially developed. This development was completed, the pulp mill erected, and on January 31st the production of pulp began. Twelve Jenckes grinders are installed here, and have a capacity of 84 tons per day. This is one of the most modern pulp plants in the Dominion. The pulp is pumped through a 16-inch cast iron pipe, for three quarters of a mile, underground, to the new wet machine room.



The new wet machine room is 100 by 200 feet built entirely of concrete and steel, has ten 84-inch wet machines, built by the Sherbrooke Machinery Company, and are fitted with eight centrifugal screens.

All the wet machines, screens and pumps have an individual electrical drive.

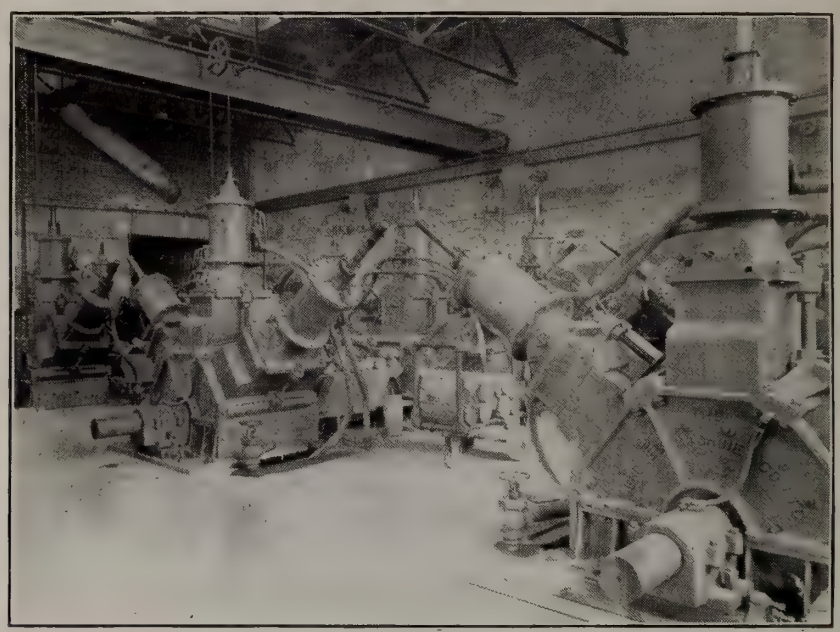
Extensive alterations are being made continually, and when completed the plant will be one of the most complete and extensive in Canada, employing 500 hands.

This article would be incomplete without reference to Mr. C. A. Ring, of Worcester, Mass., chief engineer, who has had entire charge of the designing and building of the new plants, as well as remodelling the original mills.

Recently the company purchased the interests of the Champoux Lumber Company, at D'Israeli, the Emberton Lumber Company at Scotstown, and T. M. Craig at Reedsville; these being the only other large operators on the river. This enables the company to control the flowage of the river, which has a drainage area of 2,561 square miles. Tributary to its mills within this drainage area are: Lake Aylmer, Lake St. Francis, Lake Felton, Lake McGill, Lake Taure, Lake Algin, Duck Lake, Cariboo Lake, Trout Lake, Bear Lake, and several other small lakes which constitute a vast storminion, enabling the mills of this firm to be kept running at full capacity the year round.

The Timber Lands.

The Brompton Pulp and Paper Company now has about 276,000 acres of timber land, much of it virgin forest. This vast acreage of woodland is all located within the basin drained by the St. Francis River and its tributaries, so that pulpwood and logs from any part of the limits can be driven to either the East Angus or Bromptonville mills.



age basin of 132 square miles. The company has dams at the outlet of these lakes, and can thus regulate the flow of the river, ensuring a steady and ample power for the industries of East Angus and Bromptonville, and in addition to the above they have the advantage of the Magog River storage amounting to 110 square miles. This vast storage area already under control by this concern makes the St. Francis River one of the most permanent rivers for power purposes in the Dominion.

The company figures that its limits are inexhaustible. This permanence is assured by their policy of conservation. At least 50 per cent. of the annual supply of pulpwood is purchased from settlers and farmers so that only about one-half of the year's consumption is drawn from the company's limits. The annual drive is about 90,000 cords. One-third of this goes to Bromptonville, while the balance is disposed of at the East Angus plant.

WHY MUST IT ALWAYS BE THE PAPER

Professor Herzberg has lately again published a number of instances in which the paper has been stigmatized as the cause of various troubles.

1. A paper mill received several complaints regarding the faulty sizing of its papers, and was quite unable to explain the cause. The complaints came exclusively from one locality, and this prompted the people at the mill to obtain some of the ink used there. When employing this ink it was proved that the latter spread into and penetrated all papers, even those well sized. Hence it follows that not the paper, but the ink was at fault.

2. Complaint was made by the receiver of a shipment of aluminium utensils in South America that on most of the objects whitish spots had formed, whereat the metal was corroded. At the test in the Material Testing Office it was determined that the paper contained neither chlorine, free acid, nor salts having an acid reaction. It was not possible to produce the spots when aluminium plates were kept in contact with the paper in a very damp atmosphere and at an increased temperature. The chemical analysis proved that the white powder adhering to the paper consisted chiefly of aluminium hydroxide. This indicated that the existence of the white spots and the corrosion were due to an action which has already very often been observed specially in tropical countries of great humidity, namely, decomposition of the aluminium. Here also the paper was first adjudged to be faulty.

3. An unsized paper had been employed for wrapping bottles filled with scent. Various consignees complained that the paper emitted an objectionable smell. Investigation proved that the wrappers had been in contact with some offensive smelling liquid; had this explanation not been forthcoming, the paper again would certainly have been unjustly blamed.—Der Papier Fabrikant.

CHEMISTRY OF THE ROSIN SIZING OF PAPER

By OTTIS CRESS and R. T. STRUTHERS

Probably Illig in 1827 was the inventor of the method used since then for the sizing of paper with rosin size. It consists in present practice, of adding the stock in the beaters, a solution of rosin saponified with sodium carbonate, followed by an addition of aluminum sulphate.

Rosin is a mixture of various acids and acid anhydrides, in which abietic acid predominates, and this explains the solvent action of solutions of alkalies on rosin under the influence of heat. The solution of rosin size on the addition of solutions of aluminum sulphate give a voluminous precipitate of aluminum resinate. Upon extracting paper which has been sized with rosin by such solvents as ethyl ether, the occurrence of free rosin has usually been explained as due to hydrolysis of the aluminum resinate by water.

Neugebauer has investigated the reactions of rosin size with aluminum sulphate and found that the precipitate of aluminum resinate contained approximately one-third free rosin and two-thirds aluminum resinate. It has appeared advisable to investigate further the interaction of size and aluminum sulphate to determine, if possible, the variations in composition of the precipitate of aluminum resinate by varying the quantity of aluminum sulphate used, and by varying the strength of the size. Various strengths of rosin size were prepared, using from 5 to 40 per cent. of sodium carbonate, based on the weight of the rosin. The rosin used was a high commercial grade which was extracted by ethyl ether to remove foreign material, which would not saponify with alkali. The rosin so prepared softened at 74°C. and melted completely at 79°C.

To prepare these solutions, twenty grammes of rosin were taken in each case and treated with half the required amount of soda ash in solution, using about fifty cubic centimetres of water in all. After two hours steaming on the water bath, the balance of the required soda ash was added, and the solution finally allowed to evaporate to a paste. The paste of sodium resinate was now taken up with hot water, and the residue treated with hot water until no further solution occurred. The combined washings were made up to one liter and filtered into tight glass-stoppered bottles. With 15 per cent. soda ash practically complete saponification occurred. These solutions prepared with 10, 15 and 20 per cent. soda ash had the ordinary appearance of the size such as is used at the mills—a creamy opaque appearance. The solution obtained with 5 per cent. soda ash was of a more watery appearance as only approximately 2.8 per cent. of the rosin was taken up. Solutions using 30 and 40 per cent. sodium carbonate were of a clear yellow, the peculiar colloidal appearance having disappeared in consequence of excess of soda ash.

The size solutions so prepared were analyzed for rosin by taking 50 Cc. and decomposing in a separatory funnel by hydrochloric acid. The rosin set free was dissolved in ethyl ether, and the ether layer washed twice. The ether layer with dissolved rosin was run into a weighed flask and dried to constant weight at 80° to 85° C. The percentage of rosin found, based on the twenty grammes used in making solution, is tabulated as follows:

Solution.	Rosin found based on weight.	
5% Na_2CO_3	2.72%	2.87%
10% Na_2CO_3	50.58%	50.66%
15% Na_2CO_3	98.06%	98.35%
20% Na_2CO_3	99.52%	

The solutions using 30 and 40 per cent. soda ash were not analyzed, as complete solution of the rosin was obtained.

The solutions were examined under the ultra-microscope and with 5-10-15% showed the true characteristic of colloidal solutions. The solution obtained with 20% soda ash, while having the peculiar appearance of colloidal solutions, was found to be devoid of action under the ultra-microscope. The 30% and 40% solutions showed no activity. The 15% solutions showed the greatest activity and on addition of solution of sodium carbonate to the slide a precipitation occurred and the colloidal action increased. The addition of strong salt solution caused immediate suspension of activity, and even dilute salt solution greatly impaired the activity. The addition of acid, such as acetic, of course produced a precipitate of free rosin and disappearance of activity.

Measured volumes of these solutions of rosin size prepared by using various amounts of soda ash were precipitated by solutions of aluminum sulphate made to strength of 1 cc.=.01 Gm. aluminum sulphate. Duplicates were made in each case using an excess of aluminum sulphate, and then a deficient amount of aluminum sulphate as precipitant. The precipitated aluminum resinate was filtered and washed till free from sulphates with distilled water, and dried at 80° to 85° C.

To analyze the mixture of aluminum resinate and free rosin, various solvents were tried to see if it would not be possible to dissolve out the free rosin and leave the aluminum resinate intact. Various solvents were tried such as methyl alcohol (Kalbaum), ethyl ether, (Kalbaum), acetone, xylol, ethyl alcohol (95 per cent). chloroform, benzene, amyl alcohol, carbon disulphide, and sodium carbonate, by boiling a small sample of the dried precipitate, filtering into platinum dishes, evaporating off the solvent and ashing the residue. In all cases traces of aluminum oxide were determined qualitatively in the ash until the solvent used by Neugebauer, which is ethyl alcohol of specific gravity of .877, was found to take up no aluminum resinate. The method followed was to extract from a weighed amount of the dried precipitate of aluminum resinate and rosin, the free rosin by ethyl alcohol, specific gravity of .877. The solution of rosin was evaporated and dried to constant weight. The percentage of aluminum combined with rosin as aluminum resinate was determined by ashing a weighed sample, and blasting the residue to aluminum oxide. The percentage of aluminum was then calculated.

Unfortunately the same amount of aluminum sulphate was not used in each case, care only being taken that for each solution both a precipitation using an excess and deficiency of aluminum sulphate were employed. The composition of the aluminum resinate is given by Neugebauer as Al OR, using a formula weight

of 353 for rosin. The resinate obtained on analyzing the sample of aluminum resinate shows that (probably depending on conditions) precipitates of various compositions are obtained.

The very high proportion of free rosin in the precipitate obtained by treating size solutions with aluminum sulphate is probably due to solubility of rosin in sodium resinate. On addition of a salt like aluminum sulphate this colloidal rosin is precipitated and becomes entangled with the aluminum resinate.

As would be expected the higher the proportion of soda ash used in saponifying the rosin, the greater will be the percentage of aluminum resinate in the percipitate when an excess of aluminum sulphate is used as precipitant. When a smaller quantity of aluminum sulphate is used for precipitation, so that the size is in excess, the free rosin will decrease.

Melting points were attempted on the aluminum resinate, obtained by dissolving away the free rosin with alcohol of specific gravity .877. No softening was found even at 230° C. Samples of the mixed aluminum resinate and rosin showed a softening due to the melted rosin, but contrary to expectations the melted rosin did not dissolve the aluminum resinate at 230°C. The aluminum resinate decomposes when heated in platinum, leaving a residue of aluminum oxide.

Sample sheets of paper made from bleached sulphite stock and sized with rosin size were extracted with ethyl ether which dissolved the free rosin and a small amount of aluminum resinate (Al_2O_3=.03%). The sizing quality of rosin size is probably due to free rosin, the aluminum resinate probably having very little actual sizing qualities.

Samples of the mixed aluminum resinate and free rosin after extraction with solvents to remove the free rosin were treated with hot dilute acetic acid. The precipitated rosin set free by the decomposition of the aluminum resinate was filtered and ignited and showed only a trace of aluminum oxide, (.46%). Aluminum hydroxide prepared from alum by precipitation, was dried under the same conditions as the mixed precipitate of rosin and aluminum resinate and was found to be practically insoluble in the dilute acetic acid. It appears that the high percentage of rosin found in the precipitate is due to the solubility of rosin in sodium resinate and not from the hydrolysis of aluminum resinate.—Paper.

Experiments Using Deficiency of $Al_2(SO_4)$ as Precipitant.

Solution used in % Na_2CO_3	Total Rosin found in Solution based on 20 Gm. taken		% Free Rosin found in ppt. of AlR plus rosin		% AlR found in ppt. of AlR plus rosin		% Al calculated from Al_2O_3 as combined as AlR	
5%	2.72%	2.87%	84.26	.....	15.74	.....	20.64	.....
10%	50.58%	50.66%	60.74	61.25	39.26	38.75	6.26	6.26
15%	98.06%	98.35%	54.35	54.68	45.65	45.32	4.20	4.41
20%	99.52%	.....	63.28	62.45	36.72	37.55	5.16	5.19

Experiments Using Excess of $Al_2(SO_4)$ as Precipitant.

5%	2.72%	2.87%	74.28	.....	25.72	.....	14.17	.....
10%	50.58%	50.66%	76.94	77.75	23.06	22.25	10.20	10.18
15%	98.06%	98.35%	49.14	49.20	50.86	50.80	5.01	5.00
20%	99.52%	.....	43.75	43.77	56.25	56.23	6.50	6.51

FORESTRY AS A PROFESSION

During the last decade forestry in the United States has developed with remarkable rapidity. The adoption of forest management in the National Forests, the activity of various states in public forestry, and the increasing interest of public owners in timber growing and protection have resulted in a marked demand for trained foresters.

When active work in forestry first began there were no forest schools in the country, and those entering upon the work were obliged to go to Europe for technical training. In anticipation of the need of forests, and in order to aid in the development of forestry, several progressive institutions established schools of forestry, even before the demand for any considerable number of men was definitely assured.

The first professional school was established at Cornell University in 1898. This was followed in 1900 by the Yale Forest School. Private instruction in forestry was given at Baltimore, North Carolina, by Dr. Schenck, in connection with his work on the Vanderbilt estate as early as 1897, and a school for rangers was started by the State of Pennsylvania at Mont Alto, Pennsylvania, in 1903. Since that time instruction in forestry has been introduced in a large number of institutions. To-day there are twenty-two institutions which give courses leading to a degree in forestry, and about forty others which include it in their curricula. It is estimated that there are fully 500 foresters in the United States with a greater or less degree of technical training, in addition to 1,500 forest rangers who began without a knowledge of the technical side of forestry, but many of whom through their experience in National and State forest work have, under technical direction, acquired considerable knowledge of certain phases of the subject. There are probably about 1,000 young men studying in the forest schools. Forestry may therefore be considered an established profession in the United States.

In Canada, forestry education dates from the establishment of the Faculty of Forestry at the University of Toronto, under Dr. B. E. Fernow, in 1907. This is the leading forestry school in Canada at the present time. Instruction in forestry is also given at Laval University, Quebec, and at the University of New Brunswick, Fredericton. Lectures in farm forestry form a part of the course at Ontario Agricultural College, Guelph.—Ex.

WOOD WASTE UTILIZATION

A Modern Problem, The Components of Wood Waste, Primary Marketable Products

By JOHN E. TEEPLE, Ph.D.

In a paper read before the New York Section of the Society of Chemical Industry, Dr. Teeple gave a survey of the present methods of utilizing wood waste in America. The paper was devoted to a consideration of plants in actual operation, or which had been in operation, and results that had actually been obtained in practice, and did not include any of the enormous number of patents, prospectuses, projected plants and experimental data that have accumulated. He first called attention to the fact that the problem of wood waste utilization is an extremely modern one, closely associated with a recent interest in conservation in general, though the treatment of wood itself to recover valuable products is almost as old as the history of man.

The raw materials of wood waste utilization in United States come from the Southern pines, particularly the long-leaf pine, the red or Norway pine of the North, the Douglas fir of the Pacific coast, and various hardwoods. The waste is due to the operation of lumber mills, and may be presented in the form of sawdust, slabs, edgings and ends at the mill, or of stumps or fallen timber in the woods.

The components of wood waste are essentially the cellulose and lignin or lignocellulose, water, and, in the case of resinous pines, the oleoresin. These are the sole valuable constituents of wood from the point of view of wood waste utilization, and any method of utilization must consist in the extraction or transformation of these products.

The primary marketable products which are obtained from wood waste were enumerated and described as follows:

Paper Pulp. — This is obtained by separating the cellulose from the other constituents of wood. A very good product can be made, but the kind of wood suitable for the extraction of turpentine and rosin is not the kind most suitable for the manufacture of paper pulp, and a large production of either one means a small production or an inferior quality of the other. The paper pulp industry should grow rapidly.

Ethyl Alcohol.—This is obtained by decomposition of the lignocellulose by very dilute acids, using high temperature and pressure for a short time. Unselected millwaste is used, and two plants are now in operation with a total production of 5,000 to 10,000 gallons per day.

Acetate of Lime, Wood Alcohol and Charcoal.—These are products of the decomposition of lignocellulose by direct heat, and are exclusively obtained in hardwood distillation. Hardwood gives about 30 per cent. charcoal, 10 gallons wood alcohol per cord, and 200 pounds acetate of lime. Pine wood gives considerably less than half as large yields of wood alcohol and acetate of lime, and gives about 20 per cent. charcoal.

Turpentine, Pine Oil and Rosin.—These come entirely from the oleoresin of the coniferous woods. The oleoresin may be extracted by solvents and separated into these three constituents, or the wood may be steamed to drive out the volatile portions of the oleoresin, or the wood may be heated, driving off the volatile parts, and melting out or decomposing the rosin. Very good and perfectly marketable grades of both turpentine and rosin are made from wood.

Tar, Tar Oils, Creosote Oils, Pitch, Light Oils, Wood Oils, Gas.—All these products are obtained whenever cellulose or wood is distilled. In the case of hardwood, none of the products has a marketable value with the exception of some light wood oils which are used in shingle stain manufacture and similar industries. The other products find use as fuel at the point of manufacture. In pine wood distillation, on the other hand, all of the products have value and the tar, pitch, tar oils, etc., are particularly valuable because in addition to the decomposition products of the wood itself they also contain the products of distillation of rosin in the wood.

Cattle Foods.—When the lignocellulose of wood is treated with dilute acid, a very considerable quantity of sugars is formed, and it has been found that by using sawdust a product of good food value can be obtained very cheaply. This is being manufactured regularly in England, and it has now been taken up in this country.

A great many secondary products are made wholely or entirely from these primary marketable products: for example, acetic acid and hence vinegar are largely made by decomposing acetate of lime with sulphuric acid. Acetone so extensively used in the rubber industry is made by distilling acetate of lime. Camphor has at times been made from turpentine, and probably will be whenever the comparative prices of turpentine and camphor warrant it. Rosin oils are made from distillation of rosin and they enter largely into the manufacture of printing ink and various greases and lubricants. The various tar oils, creosote oils, etc., from resinous woods, contain materials with valuable antiseptic properties and so have found quite extensive use in wood preserving, in preserving paints, as cheap substitutes for linseed oil, in manufacturing disinfectants, etc. Pyroligneous acid from resinous woods also is a disinfectant and it has found a limited use as a general disinfectant for stables and for refuse generally, particularly in communities afflicted by epidemic fevers. Pine oil contains a number of valuable terpene derivatives which have made it a useful ingredient of many liniments and other drugs and a useful source of terpineol and some other products used in the perfume industry.

Of the various processes in use, hardwood distillation is conducted in Southern New York and Pennsylvania in small horizontal retorts. In Michigan where charcoal is the chief object it was formerly conducted

in large kilns, but the newer plants consist of horizontal ovens 60 feet or more long into which the wood is run on cars. This industry does not seem to be increasing rapidly at present. The paper pulp manufacture from wood waste is only started and will probably increase with a fair degree of rapidity. Up to the present only good grades of wrapping paper have been made commercially. The manufacture of ethyl alcohol from wood waste may also be expected to increase. Only two plants exist to-day. The plants must necessarily be large ones, and require a heavy investment. The yield may be considered as 20 gallons ethyl alcohol per ton of material.

Destructive distillation of resinous woods is not increasing rapidly. New plants start up frequently but unless the raw material is cheap and well selected, the plant well managed, and much care given to the preparation and marketing of the goods, there is not a large margin of profit. Where these precautions are taken business can be conducted profitably.

Steam distillation for the recovery of turpentine and pine oil only, is at present conducted only in a few sawmills where all the wood waste is treated. Where the plant is properly installed there is a margin of profit.

Two plants are operating and have been for some years, using the bath process, or in reality a solvent made of rosin or rosin mixed with pitch, tar, etc. After the extraction with this bath to recover turpentine and pine oil, the wood is destructively distilled.

The most rapid increase within the last two or three years has been in the number of plants erected to extract turpentine, pine oil and rosin from resinous woods by the use of a solvent. At least eight plants are now in operation or ready to operate, and a number more are under way. Ordinarily, light wood yields ten or twelve gallons turpentine, two or three gallons pine oil, and 400 to 450 pounds rosin per cord. Stumps yield 600 pounds or more of rosin, and proportionately larger amounts of turpentine and pine oil. The number of these plants is still increasing, but the loss of solvent during extraction and the rapidly increasing price of solvent is becoming a serious matter.

In the manufacture of stock food by hydrolysis of lignocellulose with a weak acid, we should expect a considerable extension of the number of plants. At present only one is operating in this country.

The chief aim of the address, after reviewing what has actually been done in a commercial way in this country, was to attempt to remove the idea of any mysterious possibilities in wood waste that would warrant prospectuses showing wonderful profits such as are frequently seen. The speaker insisted on the point that the number of constituents of wood waste were few, and fairly well known. The methods of utilizing these constituents had been examined with a great deal of care by large numbers of people, and the fund of information and experience available had already reached extensive proportions. It was an industry that would warrant good returns on the investment, provided the same care and intelligence were used in it that were already exercised in well established chemical plants, and provided the investor did not allow the enthusiasm of the promoter to cloud his vision.—Paper.

WATER POWER IN MANITOBA

The investigation of water powers in Manitoba has recently been attracting special attention from a number of private and municipal interests, and form a valuable portion of the potential wealth of this province. Water power in this country, where coal and gas are so expensive, will exert a great economic influence on the establishment and growth of large industries. These powers are under the jurisdiction of the Hon. Dr. Roche, Minister of the Interior, and are administered under Section 35 of the Dominion Lands Act, 1908, and by regulations established thereunder by Orders-in-Council.

J. B. Challies, superintendent of Water Power Branch, has charge of the departmental work under the Minister's direction.

Some idea of the great quantity of power that is available may be gathered from the following:

Water Power Site		Assumed	Theoretical
Nelson River	Head	Min. Flow.	Horse Power
Whiskey Jack Portage	45	80,000	409,000
Ebb and Flow Rapids	17	80,0000	263,000
White Mud Falls	29	80,000	263,000
Bladder Rapids	20	80,000	181,000
Chain of Rock Rapids	35	80,000	318,000
Devil's Creek	27	80,000	246,000
Grand Rapids	45	80,000	409,000
Above Gull Lake	36	80,000	327,000
Gull Rapids	68	80,000	618,000
Moose Nose Point	40	80,000	364,000
Head Kettle Rapids	40	80,000	364,000
Foot Kettle Rapids	54	80,000	491,000
Head Long Spruce	60	80,000	546,000
Foot Long Spruce	40	80,000	364,000
Above Last Limestone Rapid	58	80,000	327,000
Extreme Head of Navigation	36	80,000	327,000
Total. . . . —			5,906,000
Saskatchewan River			
Grand Rapids	90	7,000	70,000
Red Rock Rapids	15	7,000	12,250
Demi Charge	15	7,000	12,250
Water Hen River			
Meadow Portage	20	5,000	11,400
Fairford River			
Fairford River	20	5,000	11,400
Little Saskatchewan River			
Near Mouth	32	100	360
Minnedosa	25	100	290
Assiniboine River			
8 Miles East of Brandon	20	700	1,600

The Winnipeg River

Water Power Site (H.P.80% efficiency in each column)	Head	Min. unregulated flow 12000 sec. ft.	Flow regulated by Lake of the Woods 19,000 sec.ft.	Maximum regulation of river 25-000 sec.ft.
Winnipeg Municipal plant:				
Point du Bois Falls	47	51,200	81,300	107,700
Slave Falls	26	28,400	45,000	59,000
Winnipeg St. Ry. plant	39	42,500		
Seven Sisters	40		25,400	47,000
McArthur Falls	20	21,800	34,500	45,400
Grand du Bonnet Falls	43	47,000	74,200	98,000
Pine Falls	47	51,300	81,200	107,000
Total. . . .		242,200	341,600	464,100

Summarizing the foregoing shows the Winnipeg River totals:

Under unregulated conditions ..... 242,200 H.P.
Under Lake of Woods regulations ..... 341,600 H.P.
And under total regulation ..... 464,100 H.P.

SOME PROBLEMS OF NATIONAL FORESTRY

By HENRY S. GRAVES, Chief Forester of United States

For several years the conservation of our natural resources has been a subject of almost continual controversy. To many this seems strange, because repeatedly the country has placed itself most emphatically on record in favor of the underlying purposes of conservation. And it is as true to-day as at any time that there is a practical unanimity of opinion throughout the country that our forests should be protected from destruction by fire, and that it is desirable and wise to handle them so as to provide for a continuous supply of timber and so as to secure their protective influence on water resources. In the same way no one would dispute the public advantage of preventing waste in the exploitation and use of timber, minerals and other natural resources, and of the introduction of methods of agriculture that will result in greater yield of farm products of all kinds.

Controversy first arises when the public through Federal State, or local governmental agencies undertakes to exercise such control over the development of natural resources as is necessary to secure the objects of conservation. The country stands aghast at the idea of the use of injurious adulterants and preservatives in foods; yet when it passes laws to protect the public health there is a conflict at once, and executive officers who make the laws really effective are subjected to abuse and pressure under the allegation that they are unreasonable and are interfering with industry. In practically the same way the controversies over conservation have to do almost wholly with questions of public participation in their development. There is a fight over water power because the public proposes to exercise a control over the use of power sites in the public domain and national forests and over the development of power on navigable streams, in the interests of the people at large. The controversy over the Alaskan coal fields centers about the question whether or not those valuable resources shall be parcelled out to private owners without a control which will guarantee the protection of the public interests. State forest laws are unobjectionable until private owners are reqiured to properly protect their property from fire and the question arises as to restrictions applied to the cutting of forests in the mountains, to prevent injury to the public through erosion, irregular water flow, and torrents. And finally, national forestry is subjected to constant attack because the national forests are to be retained under Federal control and administration instead of being parceled out to private owners.

The first effective step in forestry in all countries has been the organization of a proper administration of the forests owned by the public. Forestry really began as a practical matter in this country when the Governmen established the national forests. These have now been under administration for about twelve years. The result is that many persons mistakenly believe that the forestry problem of the country is practically under way to solution. The fight for the continued control by the public of the resources it owns is by no means over. Only the first skirmish has been won. There is to-day a consistent and well organized fight to break down the national forest system and bring about a distribution of the public resources into private hands, or to so cripple public control that the same end is indirectly accomplished.

The most recent and in many ways the most dangerous attack on national forestry is the effort to have the nation's forests and other public resources turned over to the individual States. This proposal has been agitated in certain quarters for several years. During the past year it has been gathering increased support.

For a long time the fight on conservation was directed mainly at the national forests because these were the first areas withdrawn from disposal to private owners and were the first public lands put under constructive administration. Of late the opponents of conservation have vigorously attacked the withdrawals from the public lands of water power sites, coal fields, phosphate deposits and oil lands. There have been withdrawn some 66,000,000 acres of coal lands. These are withheld only pending classification and appraisal. The water power sites are released as permits are granted for their use. The phosphate and oil fields are withdrawn pending affirmative legislation to permit their development under public control. There is further an earnest effort to secure legislation to place the public range under proper regulation. This great area, aggregating over 300,000,000 acres, is every year being more and more reduced in productivity because of abuse by overgrazing. Already the carrying capacity for stock has been reduced to one-half the normal. This, the country's greatest source of meat supply, is owned by the nation and is being depleted through lack of regulation. The present efforts of those opposed to public control of the nation's resources are directed both to breaking down the national forests, which are already organized and under administration, and also to preventing the placing under permanent management of the lands now withdrawn for coal, phosphates, oil and water power, and the unreserved public range.

Conservation is attacked under the allegation that it blocks development. The extensive withdrawals above mentioned are pointed to as proof. The coal lands and water power sites are withdrawn for use, not to prevent it. Phosphate and oil lands are withdrawn only pending action by Congress to permit their development under proper public control. They are withdrawn to prevent their passing from public ownership before such legislation can be secured. In their present condition the last-mentioned withdrawals are not yet subject to the operation of practical conservation; they merely reserved for Congress to grant authority for their proper development.

The national forests, on the other hand, have been already organized for the development of their resources. They are used to-day by hundreds of thousands of people, and every year sees their use enormously increased.

The national forests comprise a gross area of about 19,000,000 acres of land. They are located chiefly in the mountains in the Far West. They cover the bulk of the more rugged portions of the Rocky Mountains, Cascade, Sierra Nevada and Coast ranges. There are, further, national forests in the Big Horns of Wyoming, the Black Hills of South Dakota, the Ozarks of Arkansas, as well as in the Sand Hills of Nebraska and Kansas, and small forests in Michigan, Minnesota and

Florida. In addition, about 26,000,000 acres are located in Alaska, and one small forest in Porto Rico. Before their establishment as national forests these areas were unprotected. Fires ran over them almost unhindered, with a loss to the country of many millions of dollars. The land laws were such that the most valuable resources were passing into private ownership at a very rapid rate, chiefly in the hands of large interests. The purposes of the national forests were to protect the timber from devastation and to provide for a development of the resources which would not only afford a continued production of timber and of water under stable conditions of flow, but would prevent monopolies of the resources which might react to the injury of the general public.

The charge that the national forests block development is utterly unwarranted and the contrary is proved by the facts.

Take first the question of agriculture. It has been claimed by many that there are many millions of acres of agricultural lands in the national forests which the present Administration is withholding from settlement in order to grow trees on them. What are the facts? In the first place there are not, as claimed, great areas of agricultural lands in the national forests. The large bodies of agricultural land have been excluded. There are, however, in the forests many tracts of value for agriculture, chiefly in small bodies and scattered units, which on all the forests together aggregate perhaps from 2 to 2½ per cent. of the total. These are not being withheld from settlement, but are being opened up as rapidly as is possible. The Forest Service has authority to classify the agricultural lands and list them for entry under the Forest Homestead Law of 1906. Already about 1,500,000 acres have been segregated as agricultural for the benefit of settlers. The rest is being classified as rapidly as is possible. When they are under heavy timber, the timber is offered for sale and the land opened up after lumbering. Thus, in one forest in Northern Idaho, sales aggregating 500,000,000 feet are being advertised under conditions which will clear as soon as possible some 5,000 acres of agricultural lands. Another sale of 200,000,000 feet in Montana will clear 9,000 acres of agricultural land. The same policy is being carried out throughout the forests. Heavily timbered lands are not opened to entry before cutting, because settlement would not follow as has been demonstrated over and over again. The entryman acquires the land and he then usually sells out to a timber company, which holds the timber until it gets ready to cut, and then sells the land to settlers for as high a price as it can get. The seeker after cheap land is absolutely excluded under such conditions. But the Forest Service removes the timber, and then gives the land to the settler. This process is shown in many forests where Government agricultural land is rapidly passing into the hands of bona fide home seekers, while interior holdings belonging to private owners, originally taken up as homesteads, remain undeveloped and will finally be available to settlers only at a high price. One of the reasons why people have been deceived as to this question is because in traveling through the forests they have no means of distinguishing private holdings from Government land. As a matter of fact, the best land was usually selected by the timberman because the rich flats, bottoms and benches are those which carried the best timber. Here is a clear case where private ownership is blocking development, and the national forests are securing it. This is the reason why the residents of Kootenai Valley, in Montana, have petitioned against any elimination of the timbered bottoms.

The statement has frequently been made that the national forests interfere with mining development, that prospectors and miners are subject to severe restrictions, and that the mining laws are interpreted so narrowly that patents are needlessly held up or actually prevented. Such statements misrepresent the actual conditions. The mining laws apply to the national forests just as to the unreserved public lands. A prospector is allowed to work anywhere with entire freedom; all that is expected of him is that he shall exercise care in the matter of fire. Under the law he has the right to use any or all of the timber on his location for development purposes; if this does not suffice, he is granted free use of the surrounding forest. The going mine, developed and shipping ore to market, is of course expected to pay a reasonable price for timber not situated on the claims, but the Government is exceedingly liberal in its free grants of timber during the development period of the mine.

There has been complaint on the ground that national forests mining claims are scrutinized when they come up for patent, to determine whether the laws have been complied with. The mining laws lay down certain requirements as to the actual discovery of mineral and as to development work. The purpose of these requirements is obvious; namely, to prevent fraudulent acquisition of the land under the terms of mining laws. In the past, before it was customary for the Government to examine mining claims on the ground previous to issuance of patent, the mining laws were repeatedly used fraudulently to secure heavily timbered tracts for commercial lumbering, to secure valuable water power sites, to secure water sources controlling thousands of acres of public range, to secure town sites for speculation or areas valuable for summer resort development, and to secure areas blocking valuable rights of way. The prevention of such fraud protects the interest of the public which owns the land and it also protects the mining industry itself from wildcat promoters whose actions more than any other factor have resulted in injury to mining developments. The majority of those engaged in the industry desire an orderly administration of the mining laws. Certain interests, however, have been actually urging that the officers of the Government be prohibited from any field scrutiny of mining claims to see whether the claimants have conformed to the requirements laid down by Congress.

Among the most persistent opponents of conservation and the national forest system have been certain water power interests. This is because most of the streams containing water power in the West rise in the national forests, and the Government has taken the position that it will exercise a public control over the development of the water power sites. The present laws are inadequate, for they only authorize the executive officers to issue permits which are revocable at will. Without question this law acts to retard water power development, although under it over 200 permits are outstanding on the national forests. The departments at Washington have consistently urged legislation that would enable the granting of a term lease under regulations that are reasonable to the developer and which will fully protect the public interests. These efforts have in all cases failed because of the opposition of water power interests, which have endeavored to secure terms not compatible with the protection of the public interests. In other words, the development of water power has been retarded only because the water power interests have undertaken to demand what the public should not grant.

Timber on the national forests is being sold in increasing amounts, as there is the demand. The best

and most accessible timber was obtained by private owners. Therefore, the less accessible Government timber does not find a ready market. Nevertheless, upward of a billion feet have been sold every year, and since July 1, 1912, to the time of writing this article, one and one-half billion feet have been sold or the sales guaranteed. This timber is cut under methods which insure the establishment of a new crop, so as to continue the production of timber to the maximum.

The grass on the forests is also put to its fullest use under a system of regulated grazing. Over 9,000,000 head of stock are grazed under lease. The forest range, which formerly was overstocked and run down, is being rapidly restored to its normal productivity, the stock comes off the range in fine shape, and the carry-

The extensive use of the resources of the national forests is shown by the fact that the timber sales during the past year numbered nearly 6,000. Free use of timber was granted to over 38,000 persons. Permits for various special uses covering over 100 different purposes were issued to the number of nearly 5,000. Between 40,000 and 50,000 miners are operating within the national forests under conditions which work to the advantage of legitimate mining, and fully 400,000 persons use the national forests for recreation during the summer months.

The protective work of the Forest Service not only saves the timber resources from destruction, but promotes the conservation of water supplies affecting a very large number of people. The national forests comprise watersheds which conserve the domestic supply for over 1,000 cities and towns. It protects the waters of over 1,200 irrigation projects and over 300 water power projects.

The Government, through the Forest Service, is doing an immense amount of development work by opening up inaccessible country through roads and trails. There have already been constructed by the Forest Service 1,613 miles of roads, nearly 13,500 miles of trails, and over 11,000 miles of telephone lines. This work is of the greatest importance to the local development of the country.

Thus it will be seen that those who charge that conservation is blocking development are either misinformed or are using this argument to destroy the system of national forestry. National forestry is no longer an experiment. It has demonstrated its public benefits. Its advocates may justly claim the support of the country for the continuance of a work whose success is of vital importance to the welfare of the nation.—The Independent.

THE SISAL FIBRE PLANT

By RALEIGH RAINES

One of the most important lines of investigations conducted by the American Bureau of Plant Industry of the Department of Agriculture relates to experiments in fibre-plant production. Efforts have been made by the department to discover locations in this country where a sisal fibre plant may be successfully grown, and a co-operative station has been established on the Florida Keys, where practically 100,000 acres of unused land, it is believed, may be utilized for fibre-plant cultivation. The department was guided in the selection of that location from the fact that a very thriving industry in sisal has grown up in the Bahama Islands during the past ten years, the exports of sisal from the islands amounting to $200,000 last year. At present Yucatan has practically a monopoly on the production of sisal, owing to its climatic and soil conditions, and this country annually imports from Yucatan $14,000,000 worth of sisal. In many respects sisal is superior to manila hemp or abaca, which at present is grown only in the Philippine Islands and to a small extent in the Island of Java. There may be stray plants elsewhere, but not on any large scale in this country, though it might be grown in Porto Rico and Hawaii. However, experiments conducted by the department with manila hemp in Porto Rico have not proven successful as the climate appears to be too cool, though the results in Hawaii are more promising. The sisal plant is one of the chief fibre plants, and it belongs to the maguay agava family, and was called metl by the Aztecs, who from time immemorial used it as an article of food, the leaves being utilized for roofing, the fibre for weaving, and the juice for a preparation called octli. The sisal or henequin plant is of a dark green color, its leaves concaved and slender, varying in length from three to five feet when the plant has reached its full growth, and has a large number of leaves, each one opening from the centre of the plant, and ending in a sharp hook-like point. The outer covering of the leaf is of a pasty substance which is impervious to any influence except moisture. When the rain falls on the leaf the outer covering softens, permitting the absorption of the water, and with the action of the sun and warm winds, it hardens and retains the moisture within the leaf. The plant is more successfully propagated from the small root shoots which appear above the soil, which after being cut off are thoroughly dried, and when replanted become a parent plant. It requires from two to three years to reach its full bearing growth, after which the leaves are removed at stated intervals, the productive life of the plant being from 15 to 17 years. The plant flourishes on land which would be almost useless for agricultural purposes and thrives even in the sandiest and most barren sections of the valley high lands, and sand beaches. It is almost an air plant, seeming to take very little, if any, nourishment from the soil; needing no irrigation and little or no cultivation beyond the removal of wild vegetation. Sisal has been for many years the greatest source of wealth in Yucatan, and its importance as a wealth producing industry has caused its cultivation to become extended beyond the peninsular to other states of Mexico. Sisal is used in the numerous articles, such as binding twine, cloth, ore and grain sacks, handbags, mattings, brushes for scouring and toilet purposes, and all kinds of cordages, from the very finest threads to the coarsest ropes. Its greatest use in this country is in the manufacture of binding twines and ropes, and its use will be greatly augmented in the near future by the corn harvesting machines which will to a large extent demand greater quantities of binder twine. Rope made from it does not kink or mildew when exposed to the dampness or immersion in water, and will freely run through ship blocks and pul-

leys, in which respect much difficulty and annoyance have been experienced with inferior fibre. In gathering the plant for the purpose of extracting the fibre only the outer stalk is cut as it ripens. The cutting of the stalk serves to perpetuate the life of the parent plant, as so long as the stalk is cut the plant continues to grow, but when the stalk is not cut for a period of five years, it grows into a tall all wood stem, flowers, and dies together with the parent plant. The benefit of pruning shows that the more carefully the plant is looked after and the stalks cut away, the finer will be the quality of fibre. The stalks are cut by the natives and bound in bundles of convenient size for handling, one man cutting twenty-five bundles in a working day of ten hours, each bundle producing about two pounds of fibre. The bundles are fed through grinding wheels, each fibre is divided into one hundred parts or threads, unfolding all of its brilliancy and softness, in appearance much resembling silk for which it is often used as a substitute. After the green fibre is dried it is compressed into bales of 500 pounds each and is then ready for shipment. Sisal hemp is non-perishable, and resists heat and cold, and may be shipped to any part of the world in the raw state. The importance of the industry may be estimated when it is realized that within a period of twenty-three years the income derived from the cultivation of sisal has enabled Yucatan to build a number of railroads aggregating 435 miles, without any financial assistance outside the state. During these twenty-three years sisal exported through the port of Progreso alone had a value of $185,000,000, and in the town of Mirida there are over forty millionaires whose wealth have largely been derived from sisal. During the year 1907 the United States imported 590,923 bales of siasl, and all other countries 61,265 bales. In 1908 this country imported 629,897 bales and all other countries 63,280 bales. Each year the increased use for the fibre demands greater importations. The agricultural appropriation bill for the next fiscal year carries an appropriation of $10,000 for use in fibre plant investigations, and it is the purpose of the department to experiment in the cultivation of sisal with a view of encouraging its production in this country in the belief that it is destined to become a source of infinite revenue and profit. The cultivation of the plant also offers additional interest owing to its adaptability for paper manufacturing purposes.

PAPER STOCK CRITIC CRITICIZED

Charles R. White, of Chicago, chairman of the Box Board Division of the American Pulp and Paper Association, in an address before the recent New York convention advocated the establishment of paper stock warehouses in the various thickly populated centres of the country, claiming that "it is the utmost reach of absurdity to permit a product like waste paper in bales to fluctuate from 25 to 50 per cent., or even more, within three or four months, or even a year."

The waste trade journals caustically criticize Mr. White's proposition, one claiming that "Mr. White has a very crude knowledge of the paper stock business and displays arrogance and prejudice," and that "during the past year paper stock going into the manufacture of box board advanced only $3 a ton, while the price of board product advanced $8 a ton."

Mr. F. C. Tyler, of the Western Paper Stock Co., Chicago, believes Mr. White's language is intemperate, claiming that Mr. White should know that the straw crop last year was a total failure, due to the severity of the winter. "There was practically no straw on the market at any price," says Mr. Tyler. "The same weather conditions which operated to produce a shortage of straw likewise produced a shortage in the waste trade. It curtailed collections. Prior to this there was a comparative shortage, due to an active paper mill demand. When the board mills rushed into the paper stock market under these conditions, we were not prepared to meet them. But to relieve the situation by inducing collections, we advanced the buying price. This had a limited good effect, but wholly insufficient. Under just such conditions, and no other, the mill price was advanced accordingly. It was not out of proportion to prevailing supply and demand. Prices have since receded.

THE SIZING OF FINE PAPERS

A writer in the Papier Zeitung details some of his experiences extending over ten years in the sizing of fine rag papers. The water supply of his mill consists of an extremely soft river water. Generally no difficulty was found in obtaining effective sizing; but occasional periods when sizing was difficult were experienced and were ultimately connected with periods of heavy rainfall. It was considered that the rain dissolved mineral salts from the land which changed the composition of the river water, and invariably two or three days after the rain had ceased the sizing again became normal. In the autumn also the sizing occasionally suffered without there being any rain to account for the trouble, which in this case was attributed to the accumulations of dead leaves on the banks of the stream.

The size was boiled with a fairly high proportion of soda, viz., one part of calcined soda to three parts of rosin and 13½ parts of water; boiling was carried on for four hours and a little salt was added to clarify the size. For many years sizing was assisted by the addition of albumen dissolved in ammonia, whereby the consumption of rosin was reduced and the sizing and other properties of the paper much improved. Albumen, however, became too expensive, and later casein was used instead; the results were not so favorable as with albumen, but still showed an economy of rosin; at present the price of casein is too high for general purposes, and it is only employed for special papers.

For most papers potato starch was used with the size. The starch was mixed with water and strained through a fine sieve; the liquid was mixed with the rosin size and heated to a temperature of 140 degrees F., so as just to gelatinize the starch. Papers required to stand a severe folding test were not sized with starch, as the starch was supposed to make the paper crack more easily. Experiments with starch treated with alkali showed no advantage over plain gelatinized starch. For papers which were particularly required to have a bulky handle raw potato starch was used. This answered its purpose well, but presented the disadvantage of rapidly dirtying the drying cylinders: other starches possessed the same drawback. Gelatinized starch, when used with the size, not only acts as a sizing agent in itself, but it also retards the reaction of the alum with the rosin size so that a finer precipitation is obtained. The quantity of starch used was varied according to the purpose, ranging from 3 per cent. to 20 per cent. of the beater furnish.

To many kinds of paper stearin was added dissolved in borax or soda ash.

SIZING PAPERS

By this is meant sizing paper after it leaves the Fourdrinier, whether the pulp has been sized or not. This after-sizing is sometimes practised when a paper turns out more absorbent than was expected. It is, however, an expensive remedy in this case, and the best plan is to devote the faulty paper to some other use, without trying to correct it. More commonly, the after-sizing is intended to supplement sizing in the hollander, in the case of some special paper which requires properties which only after-sizing can give.

The size used is in nearly all cases ordinary glue or gelatine, and there are two sorts of machines for applying it to the otherwise finished paper. In one sort, heated cylinders and air are both used to dry the size, in the other hot air only. In the first kind there are fans on and near the winches which draw the sized paper from between the pressing rolls. The draught of the fans dries the paper partly, and the drying is finished on the cylinders. In the other sort of machine, there are more winches, but no drying cylinder. There are also air-drying machines in which the paper is hung up in great loops, as in making art paper. The glue used must be pale. Common glue is unsuitable on account of its color, and is really dearer in the end, because so much more of it must be used than of pale glue or gelatine.

Papers made from hard, greasy pulp should be damped before after-sizing to open the pores and enable the size to penetrate.

The strength of the size solution used is from 2 to 5 or even more per cent. The strength required depends on the thickness of the paper as well as on the degree of impermeability required. If this degree is high, and much rustle is required, potash, alum or formaldehyde is often added to the size. The amount of these bodies used must always be determined for each batch of glue, as what professes to be the same glue varies according to the time of year and other circumstances, and it is dangerous to use too much alum or formaldehyde, which may solidify the whole contents of the glue-trough, and stop the sizing and waste the size. In testing, alum or formaldehyde is cautiously added to a small quantity of the size solution, a little at a time, until coagulation sets in, when the quantity added is noted. We then can calculate how much it is safe to put in the glue trough. The alum solution should be from 5 to 10 per cent. strength, the formaldehyde weaker. The sample of size being tested must be kept at the same temperature as the glue trough of the machine, i.e., 35 to 40 deg. C. The colder the glue is, the less alum will coagulate it.

To prevent the size from going bad, as it will quickly do, in sultry summer weather, a preservative is added. Alum or formaldehyde is often used, but the disadvantages of such an addition, made as just stated for another purpose, has been mentioned. There is, of course, a strong temptation to kill two birds with one stone, but whether alum or formaldehyde is used to give impermeability and rustle or not, it should not be used as a preservative, for which purpose salicylic acid is far more suitable. There is, however, one important rule. If, in spite of every precaution, the size has gone wrong, it is false policy to add disinfectants then. It must be thrown away. The loss incurred is as nothing compared with the future trouble and greater loss risked by using disinfected size. It is said that if the putrid size, which is acid, is neutralized with ammonia, it will be all right, but experience has proved the contrary. The ammonia cannot be added in quantities larger than those required to neutralize the free acid, and then has no effect on the destructive bacteria. We may here mention that alum, to be added to size for any purpose, must be quite free from uncombined acid.

The best temperature for the size-bath is from 35 to 40 deg. C., which must be maintained against the cooling due to the paper being drawn through it at a speed of from 10 to 15 metres per minute. The speed is regulated according to the amount of size to be absorbed. The slower the paper goes, the more size it takes up. On leaving the bath (trough), the paper is wrung between rollers to secure penetration, and the superfluous size is returned to the bath.

Many sizers roll up the paper damp as it leaves the wringing rolls, and leave it for a few days thus, before drying it. The idea is to improve the penetration of the size. If this procedure is followed, there must be alum in the size to prevent the paper from sticking together.

To get the full effect of after-sizing, the use of artificial heat for drying is unadvisable, for the steam generated from the paper by the hot cylinders, which must escape, bursts through the size, and causes unlevel sizing, and often lines and spots where there is no size at all. A simple experiment will show how important this is. Let two pieces of unsized papers be dipped in a 2½ to 3 per cent. solution of alum in gelatine, and let one be dried in the air, the other on drying cylinders. When both pieces are dry, write on them with ink. The difference in the permeability of the paper will at once be very manifest. Another disadvantage of hot drying is that it lessens the rustle, to give which is one of the purposes of adding alum.

If an after-sizing fails to increase the impermeability of the paper sufficiently, the sizing may have to be repeated, but there is a cheaper process which is often successful. It consists in rolling up the defective paper as above described, and subsequently passed through formaldehyde, and dried on hot cylinders. The formaldehyde used should be in the form of a one per cent. solution. It must be remembered that the vapour from strong formaldehyde is very detrimental to the health of the workpeople. This method has the additional advantage that the color of dyed paper is not affected. A second passage through the size bath is very apt to seriously alter the color, which is not much affected by one passage.

After sizing not only improves the impermeability of paper, but increases its strength so much, that paper which will not stand official tests of breaking length will often do so after a slight after-sizing. After-sizing is one of the best methods of securing stiffness and rustle, so that it is extensively adopted for all papers in which those properties are specially required. In fact, certain kinds of drawing paper cannot be produced at all without after-sizing.

If a paper has been extra heavily after-sized, it may crack when folded. If there is reason to fear this, a very pure gelatine must be used, or a little glycerine must be added to the size.—Papier Zeitung.

THE PAPER PULP INDUSTRY IN INDIA

By B. N. Kapoor.

As is generally known, the consumption of paper is yearly increasing as a result of the rapid growth of education, until it has become one of the necessities of modern civilization. The latest statistics put the world's annual consumption at over eight million tons, with a normal rate of growth equal to 25 per cent. in ten years. The total consumption of paper in India is at present about 70,000 tons, and is rapidly increasing. About 45,000 of this is imported from Europe, not more than 25,000 tons being manufactured in the country, chiefly from Baib grass, otherwise called Bhabhar, Sabai, Bunkas (Ischaemum Augustifolium).

Rags, jute and hemp, which are important raw materials in India for the manufacture of paper, are not available in sufficient quantities, and their price is going up and the transit freights are heavy. Our forests have yet to be explored for suitable wood to be had in large quantities at a marketable rate and time will be required to make more complete investigations concerning the manufacture of wood pulp in this country. The safest and cheapest material towards which manufacturers should direct their energies is Baib grass, which has been in use for many years and is available in large quantities. Baib is noted for its yield of a good strong fibre, for strength, durability and elasticity, for the manufacture of high class paper, and is superior to the imported foreign wood pulp.

The raw material must be very cheap and the paper maker must confine his attention to such raw material as may be practically of little or no value and interest to other manufacturers, because as soon as textile manufacturers become interested in it, its price will become prohibitive.

Sir George Watts, in the "Economic Products of India," refers to Baib grass as follows: "This grass from the most ancient times hsa in the localities where it abounds been extensively used for making ropes, strings and mats, surprise has been expressed that the planting community in India does not pay any attention to the cultivation of grasses, etc., for paper making. There is evidently profit in it, and what is more, with the output of paper mills increasing every year the demand for some time to come will be expensive. The Calcutta mills draw their supplies from Sahebgung, Chota Nagpur and Nepal (the Terai), the last-mentioned having in recent years contributed fairly largely. The report issued by the United Provinces and Oudh for 1898-99 affirmed the annual production to be 200,000 maunds."

Baib grass grows in abundance as a perennial grass in the districts of Hazaribagh, Sahebgung, Singbhum and Manbhum districts in Bengal, near Poona, and in Central India, also in the U. P. of Agra and Oudh in the Government forests at Rmnagar, Naini Tal, Pilibihit, Kheri, Gonda and Bahrsich districts. The best Baib grass, highly prized by paper makers, grows in abundance within the Nepal territory. It is extensively bought and used by the paper mills as far as Bengal, despite the high cost of freight.

Paper must of course be manufactured cheaply, as that is the essential factor to its extensive use, and is what has made the halfpenny newspaper possible in England.

By the present process grass is collected in the forest, mostly by contractors, and is sent by rail in its bulky state, in some cases many hundreds of miles, incurring heavy freight charges to the paper mills, which transform it first into pulp and then into paper. Their operations are, however, seriously handicapped by the heavy cost of transport as well as the handling charges and the 60 per cent. of waste which the grass contains.

Collecting operations are therefore best confined to a limited distance from the mills, but have long since reached a radius beyond which it is impossible to go. The development of the paper industry has therefore reached its limit under the present system and has indeed threatened in recent years to decline, owing to a diminished yield from the present collecting areas. To make up for this shortage the mills have been compelled to import wood pulp from Europe at a high cost of freight and the price of this commodity is increasing rapidly in consequence of the rapid exhaustion of forests. It requires about 2½ tons of raw material to produce a ton of paper.

Now India is a country of great distances and long railway halts, and it will be readily understood that every existing mill has surrounding it an economic circle beyond which it does not pay to collect and from beyond which the collection becomes unprofitable when multiplied by 2½.

The import of wood pulp clearly shows that it does not pay the manufacturers to obtain large quantities of raw material from beyond the economic circles of collecting areas. There are no doubt enormous supplies of grass available in districts beyond the reach of the mills and the solution of the problem now confronting the paper industry in India lies in the reduction of grass to pulp on sites, thus eliminating at the point of origin the unnecessary and unproductive costs referred to. The paper mills will find it greatly to their advantage to purchase such pulp instead of making their own during the course of the manufacture of paper. At present there is no mill in India to produce pulp for the trade on similar lines as imported from Europe.

The salvation of the paper industry in India lies in the installation of pulp mills near the grass growing districts. The import of foreign pulp will very likely cease and the paper manufacturers will be assured of an enlarged and cheaper source of material which will enable them to extend their production, which has for many years been practically at a standstill.

The whole industry will thus be revolutionized on the lines now followed in Europe, with benefit to both the pulp and paper working branches of it, and it will be a telling factor towards the reduction of cost in the manufacture of paper in future, thus lending an impetus to competition with the foreign trade of paper.

The guarantee of success in an industrial enterprise is the assured sale of the finished product and the facts and figures quoted above indicate an assured local market for manufacture of grass pulp.—Paper Makers' Monthly.

CANADIAN TRADE PAPERS.

"During the past two years," said Mr. C. D. Cliffe, in an address on 'Trade Paper Advertising,' before the Montreal Publicity Association a few days since, "the trade press has had its largest and most dignified development. With the country's volume of trade increasing to such extent new industries urged publishers on to new efforts, until to-day Canada can boast of trade and technical papers that compare most favorably with any published in the world."

METHODS OF DRYING PAPER

By J. HADFIELD

The quality and finish of any kind of paper is to a large extent dependent upon its proper drying, and various manufacturers have of late devised various methods of drying in order to produce better and more uniform paper. The paper manufacturer must, in conjunction with the various methods of drying, have a sound technical and practical knowledge of the available raw materials. The effects of boiling, bleaching and beating must also be considered; also the natural and artificial impurities in loading agents, size, and dyestuffs must be known, as these effect the drying according to their character.

Drying With Warm Air.

Paper made from cotton and linen rags is more suitable for air-drying than esparto and wood pulp paper, as the latter fibres, when beaten very fine, assume a gummy mass. Paper dried by a current of warm air is preferred to paper dried over heated cylinders, other things being equal; it impoves the paper in toughness and durability. The various samples of air-dried ledger and hand-made papers are sufficient to support this method. The paper may be dried by running over wooden drums under which hot dry air is diffused, or by hanging sheets of paper on lofts in suitably heated rooms. The time and care required is more important than with machine-dried papers, as the paper produced is more expensive; therefore little waste is desired. Some of the best writing papers are dried over heated cylinders, and afterwards tub-sized and air-dried, as a temperature over 100 deg. F. would destroy the effect of the animal size. In order to obtain the best results from gelatine-size, the paper should contain from 6 to 10 per cent. of moisture, and stand for a few days previous to sizing.

The slow loft drying of paper has many advantages not equalled by machine drying; the chief is to permit the paper to undergo a regular shrinkage and retain a uniform percentage of moisture.

Drying Over Heated Cylinders.

A high temperature of the cylinders should be avoided, as the heat softens the fibres. This difficulty is avoided by using exhaust steam instead of high pressure steam for the first few cylinders. A greater number of cylinders are required, as the paper must be longer in running through the machine. The advantages of using moderately-heated cylinders are of utmost importance as regards most papers made from wood pulp, and various dyed papers sized with rosin and alum, as only papers free from acid will stand very hot and rapid drying. Exhaust steam is seldom hot enough to heat the cylinder near the reel end, but is sufficient for those near the wire. There are two sources of supply for the steam, both of which require regulation. There may be occasions when there will be sufficient exhaust steam, at other times there will be insufficient, and live steam must be added.

As the amount of water evaporated by the cylinders is very large, there must be an efficient ventilation apparatus to prevent condensation on the roof, or dirty water will be dropping all over the machine.

The exhaust steam used for heating must be carefully cleansed from the oil from the steam engine, or the inside of the cylinders become encrusted with particles of oil, which impairs the drying of the paper, and in some cases when live steam is occasionally used serious damage may result.

Water must not be allowed to collect in the cylinders, as this will retard drying, and if not attended to, the cylinder end may be blown out.

The casing of the cylinders must be of uniform thickness or irregularities in drying will result. Other things being equal, the steam pressure is regulated according to the thickness of the paper and the number of cylinders. Paper containing mechanical and chemical pulp or acid softens upon exposure to cylinders heated to a high temperature, and not duly regulated from the wet end of the calenders.

Heating Cylinders by Electricity.

The indispensable steam pipes are still a cause of encumbrance and of complications. The distribution of heat is greatly simplified by electricity, and all risk of explosion is obviated. The cylinders having no pressure to support, can be made less expensive. Steam joints are done away with, and the total weight of the cylinders is greatly reduced. Cylinders already in use can be converted by employing a fixed electric resistance mounted in the centre of the cylinder, and the ends of the cylinder are closed to avoid loss of heat. In most cases it is preferable to apply the heating resistances against the interior metal of the cylinder. This is the process which should be adopted when very light cylinders are made on purpose for electric heating. The ease with which each of the cylinders can be regulated is of great advantage.

The drying must be done with extreme discretion, in order to avoid damage to the paper; the first few cylinders may be heated to 70 degrees C., and the middle cylinders 100 degrees C., and then several 130 degrees C., the final cylinders being reduced to 80 degrees C. The consumption of electricity is in some cases very large, but the excess of electric power is no detriment where mills have plenty of water power at their disposal.

The drying felts have considerable influence in drying the paper. For example, imitation parchment requires a heavy pressure under the cylinders, which can best be got with cotton felts, as they give a firmer and more uniform pressure than woollen felts. Cotton fibres bear damp better than dry, and that wool fibres have the reverse property. Cotton felts contract on being damped, and lengthen again when they are dry. If this fact is neglected, especially when the felt is new, the tension of the felt soon becomes insufficient, which should be adjusted accordingly. Coarsely-woven felts are to be avoided, as they do not carry the web sufficiently. They are apt to slip, and the paper becomes creased. In most cases a cotton felt is employed at the beginning of the cylinders, and a wool or half-wool felt at the dry end. The felts are employed to hold the paper close to the cylinders, so as to heat it up to steaming temperature. The felts must be of uniform texture, and kept free from grease, or uneven drying will result.—Paper Making.

THE TESTING OF PAPER CLAYS

By CHAS. S. GWINN, MADISON, WIS.

The object of this paper is to describe physical tests used in determining the suitability of clays for papermaking purposes. In papermaking, a clay may be used as a filler or as a coating material, but the tests here described are intended to apply primarily to the use of clay as a filler. This is by far the more important use, since clay enters into the composition of all the ordinary printing and bond papers, as well as of many wrapping papers. The physical characteristics to be considered are : (1) presence or absence of grit; (2) color; (3) capability of disintegration, and (4) retention.

Grittiness.—Clays to be used in papermaking are desired as free from grit as possible, since the presence of such proves detrimental in many ways. The grit will be carried on the paper machine along with the stock; there it leads to increased wear on the paper machine "wires" (which are of bronze), and other machine "clothing." It also is likely to cause breaks in the unfinished sheet during the process of manufacture, and in the finished product may be the cause of specks of varying appearance. A rough way of determining the presence of grit in the clay, and one commonly used by papermakers, is to take some of the clay and "feel" for the grit between the teeth.

The following is a more definite method for determining the amount of grit. Weigh out 200 grammes of the clay under examination and add to it, in a beaker or other suitable vessel, 800 to 1,000 cc. of water. Agitate with a mechanical stirrer until all the clay has been mixed with the water and well brought into suspension; this operation will probably require an hour or longer. The mixture is then screened through a 200-mesh silk bolting-cloth screen. A small quantity at a time is poured upon the screen, and a gentle stream of water is allowed to run upon it at the same time. By shaking the screen and gently rubbing the clay with the finger, the finer particles are all washed through and the grit remains behind. It can then be dried and collected for examination and weighing. By this means the amount of the grit and its character may be determined.

The amount of grit permissible in a clay to be used for papermaking purposes depends upon the type of paper in which it is to be used as a filler. For an ordinary high-grade newsprint paper, 2 per cent. would in general be objectionable, more particularly on account of the fact that news machines are run at high speed and the presence of every added amount of grit means increased wear on the machine "clothing." The character of the grit would also be of influence in deciding this point, since a micaceous grit would not be as detrimental as one of a sandy or silicious nature.

Color.—The color of a paper clay is of importance as affecting the color of the paper, even though it may be to a small degree. In determining the color of a clay it is customary to compare the clay with others which are used as standards. These standards are chosen arbitrarily and may grade from the purest possible white to a dingy gray or yellow. They may be three or more in number, and ranked, e.g., as good, fair, and poor.

In conducting a test a small amount of clay under examination is mixed with water to the consistence of a paste and made into a smooth pat on a glass plate. The standard evidently nearest to it in color is similarly treated and made up into a pat immediately along side of the first. The surfaces of the two are smoothed off until they become continuous. By this means any differences in color are clearly brought out. The test pats are examined while still moist and also after they have dried out. The conclusion, however, is usually drawn from the examination made upon the dried surfaces, since it is considered that this condition is more representative of that under which the clay will exist in the paper, and that it shows, at least, how the color of the clay may be affected by wetting and subsequent drying. By this test the color can be classed as good, fair or poor, depending upon which of the standards it comes nearest to matching. However, it should be noted that a clay whose color might be such as to make it unsuitable for some purposes would do very well for others, e.g., clays comparatively poor in color can be used in the manufacture of newsprint, while for the best grades of book and bond papers only the whitest of clay should be used. So that a clay whose color might be determined as "poor," would do very well in a hanging paper.

Disintegration.—The quality of rapidly disintegrating is to be desired in a paper clay. A simple test for this is to put a lump of clay in a beaker of water and to note the rapidity of the disintegration. Other things being equal, a clay which fell to pieces rapidly in water would be more desirable than one which took some time to disintegrate.

Retention.—Another thing to be taken into consideration in considering a paper clay, but one which is not judged by a laboratory test, is what is known as its "retention;" e.g., if of the clay furnished to a beater, 80 per cent. is found by analysis to be present in the finished paper, the clay is said to have shown 80 per cent. retention. While the retention of a clay is dependent upon particular qualities of the clay, it is also largely influenced by other factors, such as the kind of fibre used, the length of time of beating, and the amount of clay furnished. But of two clays showing under like conditions different retentions, other things being equal, the clay having the higher retention would be the most desirable. This is simply because less of it is lost in the "white water" from the paper mill.

The amount of the retention of clay can be determined in the mill during the every-day process of manufacture. An account is kept of the amount of clay furnished to the beaters and of the amount of the paper production. Samples of the paper are taken at regular intervals, and the ash content determined, and from this the proportion of "original" clay in the paper, taking into account the moisture in the original clay and the ash of the wood, is made known. Knowing the total paper production, the total amount of clay retained can be calculated, and from this, with the amount of clay furnished, the "retention" can be computed.

PULP AND PAPER NEWS

L. H. Houpt, vice-president and general manager of the Ontario and Minnesota Power Co., was in Toronto on business last week. He reports that good progress is being made on the new news print mill of the company at Fort Frances, and that the two 186-inch paper machines are now being installed. The plant will have an output of about 125 tons per day and the machines will, it is expected, be started in September. Mr. Houpt is also president of the George Irish Paper Co., of Buffalo.

Robert Duffus, who for the past five months has been erecting the new 100-inch paper machine for Edwin Crabtree and Sons, at Crabtree Mills, Quebec, which is now in successful operation, left Toronto last week for Edinburgh, Scotland. Mr. Duffus has been in the employ of Bertrams, Limited, Sciennes, Edinburgh, for the past forty years and during that time has erected no less than fifty-four paper machines, besides overhauling many others. He has set up machines in India, Russia and many other countries.

James L. Chambers, Canadian representative of Bertrams, Limited, leaves next week on a business trip to the Old Country. He wil lbe absent about a month.

Cat. R. R. Barber and wife have returned to Georgetown after a tour of Europe and the Mediterranean. John R. Barber, who was confined to the Wellesley Hospital, Toronto, for a couple of weeks, is enjoying a little better health since the advent of warm weather and is able to take short walks.

George E. Challes, sales manager of the Riordon Pulp and Paper Co., who has been spending three weeks in New York and other eastern centres, left this week on an extended western trip to Michigan, Indiana, Ohio, and Wisconsin mills.

The J. Christie Co., have removed from 5 King street west to room 33 in the Canadian Mortgage Building, 10 Adelaide east, Toronto, where they have splendidly fitted up offices.

The Toronto office of the Lincoln Paper Mills, T. H. McDermott, manager, will remove their warehouse and stock from 63 Wellington street west, to 112 Bay street, which is being vacated by the Northern Electric and Manufacturing Co. The Lincoln people expect to occupy their new quarters by June 1st.

Robert Davies, president of the Don Valley Paper Co., who spent the past winter in Jamaica, Florida, and other southern points, has returned to Toronto. He was accompanied by Mrs. Davies.

George H. Millen, joint manager of the E. B. Eddy Co., Hull, spent a couple of days in Toronto last week on business. W. H. Rowley and wife, of Ottawa, were also in Toronto last week on their way to Chicago and other points west.

Sir Robert Perks, the millionaire British contractor, who is a large shareholder in the New Brunswick Pulp and Paper Co., Millerton, N.B., was in Toronto last week for a few days on business. It is said the company is considering the installation of a third machine.

It is expected that the new mill of the Montrose Division of the St. Lawrence Paper Mills Co., located at Thorold, will begin operations the first week in June. The paper machine is 140 inches wide, equipped with Waterous plate screens, three presses, and twenty-three forty-eight inch diameter dryers. There are two stack of calendars, one seven and one nine roll. The output of the new plant, including the present one, will be about twenty-five tons a day of book, bond and special lines of paper.

F. A. Ritchie, of Ritchie and Ramsay, Limited, denies the report which has been appearing in certain advertisements setting forth the enterprise in the town of Trenton. It was stated that his firm would erect a paper mill in that town to employ 160 hands. From this announcement two rumors spread, one that the coating paper plant of the company would be removed from New Toronto, and the other that they would put up a book and writing mill. There is no foundation for either report.

An interesting case was heard last week before Chief Justice Falconbridge in which damages are claimed for breach of contract. The plaintiffs are the Neostyle Envelope Co., of Chicago, and the defendants, Barber-Ellis, Limited, Toronto. It appears that the latter agreed to manufacture a patent envelope giving royalties of eight cents per thousand to the American Company. The envelope looks like an ordinary sealed one, but is intended for circular purposes, having a concealed flap with a securing hook on the end of it. It seems that Barber-Ellis entered into the contract in 1911 before the Post Office authorities had been consulted and the latter would not approve or permit of the use of the envelope in the mails. Judgment was reserved by the court.

J. L. McNichol, who for the past three years and a half has been superintendent of the Barber paper mill at Georgetown, Ont., has resigned his position and sails from Montreal on the 17th for a protracted visit to England and Scotland, not having been home for six years. His successor at Georgetown is Wm. McWhirter, who has been identified with the plant for many years and has been assistant superintendent for some time.

The Hough Lithographing Co., of Toronto, have purchased the Caliver tannery property in Brampton, and will establish a factory there employing sixty hands. The town has been asked to grant a bonus of $12,000 to the industry. The building just acquired is being remodelled.

Fred S. Bailey, of the Standard Paper Co., Toronto, has returned from a business trip to Wisconsin and Minnesota.

Several improvements are being carried out at the mills of the Toronto Paper Manufacturing Co., Cornwall. The three digesters have been thoroughly overhauled in the sulphite department, and a bleaching apparatus is being installed which will furnish all the company's requirements in bleached sulphite. The capacity of the sulphite mill has been greatly increased and, it is expected, that the company will have a surplus, which can be profitably sold. New turbines are also being installed in the water power equipment and the directors have approved of the installation of a loft which will enable the mill to produce high grade, loft dried writing paper.

During the past winter the Spanish River Pulp and Paper Mills took out some sixty thousand cords of pulp wood which is now being brought down the Sturgeon river. Extensive improvements have been made to the plant of the company at Sturgeon Falls, which is in charge of W. J. Hussey, formerly of Espanola. A new slasher mill built of steel, brick and concrete, of the latest type has been completed, capable of sawing one thousand cords of pulp logs per day. A new trestle

conveyor 600 feet long and 62 feet high has been erected for carrying the wood from the "slasher" to the dumping ground, and another conveyor will take the cut wood from this spot into the barker room. The twelve grinders have been overhauled and a lathe attached to each grinder for sharpening the stones and keeping them true. There are four lines of grinders, three to each line. Six will be in operation by May 20th, while the remainder will be running two weeks later. A new 350 horse power boiler has been installed, making eight boilers in all with a total horse power of 2275. Two new Dutch ovens are being added to the present two, equipped with automatic feed, for burning the refuse from the sulphite, ground wood and paper mills. For feeding the paper machines slushers will be used. After the ground wood pulp passes through the screens, it drops into a large tank, where it is mixed with the sulphite and is next carried through to the Jordans and then on to the wire of the machines.

The two additional 120-inch paper machines which are being installed by the Spanish River Co., at Espanola, are now set up. One of these machines will be running by June 1st and the other, it is expected, will be under way two weeks later. With the four machines at Espanola in full operation the production of news print will be about 170 tons daily. Joseph Crockenberg, late of the Minnesota and Ontario Power Co., International Falls, Minn., has succeeded Fred Fielding as paper machine superintendent at Espanola.

The Fred W. Halls Paper Co., which was incorporated some time ago, has opened a warehouse at the corner of Duncan and Richmond streets, Toronto.

Stanley Thompson, of Enoch Thompson, Limited, has received an inquiry from a large news print mill in New York State, asking him to be on the lookout for a suitable site near Toronto for the building of a mill, in the event of the new Democratic tariff measure being passed admitting news print free into the United States. The company now obtains a large supply of its pulp wood from Quebec, and it is also reported will erect a mill in New Brunswick.

Alfred E. Rudd, president of the Rudd Paper Box Company, states that it is the intention of his company to erect a board mill in Toronto and that two or three sites are under consideration. He recently returned from an extended trip to Ohio and other States where he inspected the latest plants in this line. The new mill will make chip board from old papers. Fuller details will be announced shortly as soon as certain preliminary reports are completed.

The Victoria Paper and Twine Co. have issued a neat publication in the shape of a railway folder and map entitled "The Victoria Lines." A list of "depots" are given. The idea is certainly original and at first glance has all the appearance of a regulation time table and route map.

Work on the large three storey steel and brick addition of the Hinde and Dauch Paper Co. is proceeding rapidly and the walls are now completed. The new board machine, which is being built for the firm by the Downington Manufacturing Co., of East Downington, Pa., will be 124 inches wide, with fifty forty-eight inch dryers, three sets of presses, one suction press and two stacks of calendars.

Harry Bennett, Engineer for Price Brothers & Co., Limited, at the Kenogami Paper Mills, Kenogami, has tendered his resignation to take effect immediately.

The Province of British Columbia has within its limits half the total timber wealth of Canada, and derives therefrom an annual revenue which can attain $100,000,000. For this reason they are spending a lot of money and making serious efforts for forest fire protection.

The J. M. Voith Engineering Works, Heidenheim-Brenz, Germany, has incorporated a company under the name of "J. M. Voith Co., Incorporated," to handle Canadian and American business, with head offices in New York in charge of Mr. H. F. Storer, C.E., at 200 Fifth Avenue, who was formerly agent for that firm.

The Canadian Pulp and Paper Association has opened offices at 404 McGill Building, 211 McGill Street, Montreal. Great interest has been aroused among the Canadian mills as well as the pulp and paper interests in other countries. The work of gathering statistics is being commenced immediately, and it is expected that the benefits of the Association will soon be felt by its members.

Mr. Carl Riordon, president of the Canadian Pulp and Paper Association, and vice-president and general manager of the Riordon Paper Company sails for an extended trip in Europe on May 8th.

Reynolds newspaper of London has purchased 480 acres of land near Castor, Alta, along the C.P.R., to demonstrate the possibilities of ideal farming. The deal was put through by Mrs. Hamar Jackson, the London writer, with the land department of the C.P.R. They expect to help emigrants who come to Canada and assist in developing the western country in this way.

Hind and Dauche who are erecting a new board mill in Toronto, have opened an office in Montreal, in the new Gillette Building.

The cofferdam of the Abitibi Pulp and Paper Co., Limited, Iroquois Falls, went out recently in the spring freshets, killing two men. The damage is only slight and the work will not be delayed.

Mr. J. M. Iverson, formerly pulp mill superintendent for the Wayagamck Pulp and Paper Co., has left that firm and is now associated with A. B. Tracy Gould, engineer, in the new Birks Building. They will conduct a consulting engineering business on pulp and paper mill practice.

The report that the E. B. Eddy Co., Limited, have discontinued the manufacture of fibre wood pails was erroneous. They have only discontinued woodenware pails due to the impossiblity of securing first-class stock, but will enlarge their departments for the manufacture of indurated fibre ware from pulp.

The old Miramichi Sulphite Mill recently purchased by A. E. Reed and Co., of London, from the Bank of Montreal, will not be operated as a mill of any kind. The purchase was simply effected for the limits which went with it.

The St. Maurice Lumber Company, of Gaspe Bay Harbor, Que., is erecting a rossing mill, with equipment of 18 barkers, for rossing pulp wood.

One of the largest newspaper properties in the Canadian West, the Calgary Albertan, was destroyed by fire. The loss was partly covered by insurance and rebuilding will commence at once. The property was controlled by W. M. Davidson, formerly of the Toronto Star.

The Howard Smith Paper Mills at Beauharnois, Que., started operations last week. The machines ran nicely and the superintendent, Mr. Courtney, states that everything promises to be going in good shape very shortly.

Continued rumours are heard around Montreal and Eastern Quebec of control in the Belgo-Canadian Pulp and Paper Company, by the Laurentide Co. They have been working in very close touch for some time, and rumor has it that they are closely associated.

The United States Department of Agriculture, Forest Service, has issued a bulletin No. 123, of the Bibliography of the Pulp and Paper Industries. It contains

a list of all the works published on pulp and paper in the last few years. Copies may be had on application by enclosing 10c.

Stanley Thompson, of Enoch Thompson, Limited, is looking for a location for a news-print mill in Canada. This particular company wants a large site, either at Toronto or Hamilton, for certain branches of its work. They plan to erect one mill in New Brunswick.

One of the largest timber limit deals ever negotiated in British Columbia was closed recently when Lacey and Co., of Chicago, sold berth W on the Lower Lillooet River to the Deere Plow Company, of Moline and Chicago, for a total approximating $2,400,000. The property was sold on the basis of $3 per 1,000 on an approved cruise showing the standing timber to be 70,000,000 feet, mostly cedar and fir. Its area is about 10,704 acres, and the lowest section is less than three miles from Haney on the line of the C.P.R. The limit is located within the Dominion railway belt. Less than a year ago the former owners bought the same limit from the Sheblin estate, of Minneapolis, for $700,000 cash.

NEW INCORPORATIONS.

National Paper Box & Carton Co., Limited, has been incorporated with a capital of $25,000 divided into 2,500 shares. Head office, Vancouver, B.C., to engage in the manufacture of cardboard boxes and all accessories.

The Mississaga Pulp and Paper Co., Limited, incorporated for $2,500,000, divided into 25,000 shares. Head office, Toronto, to do business as pulp and paper manufacturers, importers, dealers, etc.

Canadian Printing and Publishing Co., Limited, incorporated for $40,000. Kingston, Ont. C. J. Mea and Edward Ryan.

THE LAURENTIDE EXPLOSION REPORT.

An elaborate report has been prepared by the Canadian Boiler and Inspection Co., of Toronto, on the explosion of the Laurentide Digester, on December 22nd last.

This report is most valuable to all interested in sulphite manufacture from a scientific point of view; and the above firm will be glad to supply the complete report on request to their Toronto office.

It showed that the explosion which occurred was in what is known as No. 2 Digester, which was built in 1898, and not in the No. 4 Digester—which was at that time under installation by the Manitowac Engineering Works—as previously reported.

The explosion occured in one of the butt straps of 1 1-16 inches thick. The vertical seams had three rows of rivets of 5-inch pitch and circumferential seams of two rows, 4-inch pitch. The digester was lined with lead about ⅜-inch thick, with two layers of cement and tile lining.

THE MARKETS

MONTREAL MARKETS.

Montreal, May 14, 1913.

Everything is normal in regard to prices in all grades of pulp and paper. There have been no recessions, despite the activity in production and the threatened tariff changes. The only exception to this is wrapping paper, which is feeling the competition from the increased output of kraft mills. If the present tariff proposals go through kraft mills will find the duty a heavy one to overcome, and, in brief, the outlook for kraft mills is far from being encouraging. The Wayagamack Pulp & Paper Company, who are heavy manufacturers of kraft paper, expect to have 100 tons of kraft pulp for sale this fall.

Paper.

News, $41 to $43, delivered in United States.
News, $41 to $43 for large orders, $44 to $45 for small orders.
Newsprint, sheet, $45 to $50 at mill.
Book papers, carload lots, No. 3, 4⅛c. to 4½c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manila B., 3¼c. to 3½c.
Broken lots, No. 2, 5c. to 5½c.
Carload lots, No. 1, 5¼c. to 6¼c.
Broken lots, No. 1, 6¼c. to 6¾c.

Wrappings.

Fibre, 4c to 4¼c.
No. 2 manila, 3¾c. to 4c.
No. 1 manila,, 3½s. to 4½.
Kraft, 4c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.80 to $1.85.
No. 1 soft white shavings, $1.60 to $1.75.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50c. to 55c.
White blanks, 85c. to 90c.
Ledger, $1.15 to $1.25.
No. 1 book stock, 90c.
No. 2 book stock, 45c. to 55c.
Manila envelope cuttings, $1.05 to $1.10.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 55c. to 60c.
Crushed news, 45c. to 50c.

Paper.

Good mixed paper, 40c. to 43c.
Old white cotton, $2.50 to $2.75.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $2.10 to $2.50.
Blue overall cuttings, $3.45 to $3.55.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.55 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.60 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.50.
New light flannelettes, $3.75 to $4.25.
Block satinets roofing stock, 95c. to $1.00.

LUMBER UP.

(Special to the Pulp and Paper Magazine.)

Montreal, May 14, 1913.

Lumbermen state that prices for all grades of lumber is showing a steady and consistent advance. Ocean freight rates are also higher than they were last year, owing to the demand for freight boats for the carrying of wheat. In addition, the increase of building activity is consuming a large amount of lumber. Coupled with these conditions there was a lessened output last year,—all of which is making for higher prices.—R.

TORONTO MARKETS.

All the mills continue to be well employed and prices remain unchanged. A good demand for newsprint is reported, but orders for book and writing papers are said to be rather quiet at present, although most of the plants have business booked ahead for some time. Ground wood continues to be fairly active and numerous inquiries are being received. Prices are well maintained. The strong sulphite situation remains unchanged and there are no stocks on hand. There has been an advance of two dollars per ton in strawboard, and deliveries are slow. Present quotations are $33 in carload lots; filled board is going at $36; folding board $40 to $43, and mill board $52 to $70. Quotations for building paper are also stiff and the demand active. There is cutting in wrappings, ten per cent. being given off list prices by some mills in carload lots. Paper bags are still being sacrificed and sixty, ten and five off, is being quoted. The kraft paper line is only fair. Rag paper stock is moving quite freely and roofing rags continue to advance. On the whole, considering the tightness of the money market, the pulp and paper situation is in a healthy condition locally. Most of the jobbing houses report that the volume done during the first four months of this year shows an increase over the corresponding period of 1912.

Quotations, f.o.b. Toronto, are:

Paper.

News (rolls) $43 to $45, according to quantity.
News (sheet) $50 to $60, according to quantity.
Book papers (carload) No. 3, 4.10c to 4.50c.
Book paper (broken lots) No. 3, 4¼c. to 4¾c.
Book papers (carload) No. 2, 4¾c.
Book papers (broken lots) No. 2, 5c to 5½c.
Book papers (carload) No. 1, 5c. to 6¼c.
Book papers (broken lots) No. 1, 5½c to 6¾c.
Writings 4½c. to 7½c.
Sulphite Bond, 6½c. to 8½c.
Fibre, $3.35 to $3.75.
Manila, B., $2.85 to $3.25.
Manila No. 2, $3.10 to $3.50.
Manila No. 1, $3.35 to $3.75.
Kraft, 4c to 5c.

Pulp.

Ground wood (at mill), $15 to $17.
Ground wood, $22 to $24, delivered in United States.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $46 to $47, delivered in United States.
Sulphite (bleached), $58 to $60, delivered in Canada.
Sulphite (bleached), $60 to $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.75.
No. 1 Mixed Shavings, 60c.
White blanks, $1.10.
Ordinary Ledger Stock, $1.20.
Heavy Ledger Stock, $1.50.
No. 1 book stock, 90c.
No. 2 book stock, 55c.
No. 1 manila envelope cuttings, $1.25.
No. 1 print manilas, 75c.
Folded news, 47½c.
Over issues, 55c.
No. 1 clean mixed paper, 40c. to 42½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.50.
No. 1 white shirt cuttings, $5.50.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $5.00.
Ordinary satinets, 95c.
Fine satinets, $1.00.

U.S. DEPARTMENT OF COMMERCE REPORT.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., May 13, 1913.

The Department of Commerce and Labor has just issued its report for the import trade during March and for the nine months ended March 31, 1913. During March, the report says, there were brought into this country from Canada 24,571,688 lbs. of printing paper valued at not above 2½c. per pound, as against 6,900,602 lbs. in March, 1912. There were also brought in from Canada 1,042,281 lbs. of paper and paper board, valued at not above 4c. per pound.

Imports into this country during the period under review of mechanical ground wood pulp amounted to 12,843,503 lbs., free, valued at $101,798, and 5,239,609 lbs. dutiable, valued at $41,795. These are compared with the imports of March a year ago, amounting to 18,616,286 lbs. free, valued at $155,282, and 4,659,588 lbs. dutiable, valued at $35,878. The total imports of mechanical ground wood pulp during the nine months ended March 31, 1913, as compared with the corresponding periods in 1912 and 1911 were: Free of duty, 271,442,182 lbs., valued at $2,247,035, as against 288,683,923 lbs., valued at $2,349,455 in 1912, and 301,904,547 lbs., valued at $2,389,797 in 1911. The dutiable imports during the nine months ending March, 1913, amounted to 31,065,318 lbs., valued at $248,876.

Unbleached chemical pulp was imported from Canada to the extent of 3,552,848 lbs., valued at $65,389, during the month of March. During the nine months' period there were brought in 37,872,666 lbs., valued at $678,806, which is, compared with the imports during the previous corresponding period of 19,758,445 lbs., valued at $312,325. There were also brought in free of duty from Canada chemical bleached pulp in March to the extent of 1,087,938 lbs., valued at $29,772, against 1,321,627 lbs., valued at $32,736 in March, 1912. Imports of bleached pulp during the nine months ended March 31 amounted to 9,282,962 lbs., valued at $239,942, as against 11,097,684 lbs., valued at $272,605, imported during the nine months ended March 31, 1912.

There were also brought into this country during March duitable chemical pulps amounting to: Bleached, 44,414,567 lbs., valued at $6,626,035. and bleached, 12,837,113 lbs., valued at $311,590, as against 26,728,331 lbs. of unbleached, valued at $411,719, and 12,741,941 lbs. of bleached, valued at $272,853, imported during March, 1912. Meb.

MARCH STATISTICS.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., May 13, 1913.

The March statistics of the American Paper & Pulp Association which have been filed in this city with the Commissioner of Corporations, have just been made public, and show a decrease of 2,010 tons in stocks of newsprint paper.

News stocks on hand at the end of March totalled 35,824 tons, against 37,834 tons at the end of February. This decrease is accounted for on account of the excess of shipments over production. It may here be noted that news stocks have been gradually declining since last September.

Production of news during the month of March amounted to 98,169 tons, which is computed to be about 89 per cent. of the normal capacity of the mills reporting to the Association. In February, the production was 3,383 tons less than in March. The average daily output during March amounted to 3,776 tons, against 3,949 tons in February, and 4,062 tons in January.

Shipments of news in March amounted to 100,148 tons, against 95,664 tons in February, and 110,584 tons in January. The rainfall during the month in the paper making district amounted to 4.37 inches, as against 1.81 inches in February, and 3.28 inches in January.

Imports of printing paper during March were 31,288,114 lbs., as against 26,042,043 lbs. in February. About eighty per cent. of these imports came from Canada. Meb.

THE BRITISH MARKETS.

(Special to the Pulp and Paper Magazine.)

London, May 10, 1913.

The printing trades in London and some of the English and Scottish provinces are not as busy as one would like to see them, and consequently the demand for papers of high grades and good quality has had a setback. Trade, more or less, is passing through a period of slight depression which may probably be due to state of the money markets and the scarcity of money abroad and these facts somewhat tell on the output of the British paper mills for home consumption. Speaking generally, the mills are not suffering from a momentarily dullness. They have plenty of orders on hand to keep the machinery running and the rate of employment is above that compared with this time last year. In addition the export trade has to be attended to, otherwise the foreign department, and in this some of the mills are working full capacity. The demand for newsprint is brisk at home and abroad and papermakers are getting a slightly advanced price for it, as well as for writings and fine printings. The American Revision Tariff Bill, should it become law, will benefit the British makers of papers and boards and naturally they will be in the United States markets as competitors with Canada and Scandinavia more keenly than heretofore. In all probability the printing trades here will remain dull until after the Whitsun holidays, when business is again bound to become very brisk.

* * *

In the mechanical wood pulp markets very little business is passing at the moment, notwithstanding the fact that prices have for some time past been greatly in favour of the buyers. Most of the mills are well supplied and deliveries of mechanical wet are only arriving from Norwegian sources, the Swedish supply being of a small quota. Sweden is more engaged in delivering chemical pulps, but there is an entire absence of Canadian sources from the import lists. With the approach of open water shipments from Scandinavian and Canadian sources, pulp men are of the opinion that prices here are not likely to advance for some time. The present quotations are about as follows:

Pine 5 per cent. moist (prompt)	$10.32 to $10.54
Pine dry (prompt)	22.20 to 22.93

Moist, for forward delivery, costs half a dollar more, but dry is about the same as for prompt just now.

* * *

The sulphite and sulphate wood pulp markets show very little change since last reported on. Prices are against the buyers as makers are extremely firm and on the current quotations, with not very large supplies to draw upon, they are not inclined to give the slightest concession. British mills, however, are pretty well supplied on standing contracts. Another noticeable feature of the chemical wood pulp markets is the supply recently received from Roumania for Becker & Co., Limited, who started shipping from Braila some months ago. Prices are about as follows:

Sulphite bleached	$31.20 to	$40.20
Sulphite (1st quality)	44.40	44.70
Sulphite "News"	40.80	42.00
Soda unbleached (1st quality)	40.80	42.00
Soda unbleached (strong)	39.00	40.80
Soda Kraft	38.40	39.00

* * *

In the chemical market there is a shortage in the stocks of Bleaching Powder, but prices are unchanged at $25. Caustic Soda is in good request and enquiries are reported to be numerous, the current quotation being about $48.60 for 77 per cent. Ammonia Alkali is going from $16.40 to $17.20 per ton; soda crystals, $10.60 per ton; salt cake, $9.80 per ton. The export trade of the chemical market is not too brisk and sellers are much inclined to meet buyers' convenience.

The paper stock markets are very varied lately and it is impossible to say definitely what state they are in. With the arrival of large consignments of rags in the Lancashire district the paper stock market in Manchester shows a brisk demand and a shortage and prices high, whilst in London there is not a strong demand and prices are stationery. In Scotland the mills can do with all the rags they get and more. Ropes are scarce.

* * *

The tone of the Esparto market is quiet and it has remained in this condition for at least the past fortnight. Importers report that they are meeting with little response even at the lowered prices finally quoted. Freights are easy in tone and all mills here appear to be well stocked. Tripoli still continues to supply the market and prices all round are considerably reduced.

NEW YORK MARKETS.

(Special to the Pulp and Paper Magazine.)

New York, N.Y., May 12, 1913.

Conditions governing the local chemical pulp market remain relatively the same as reported in the last report. Sulphites, both foreign and domestic, are moving in goodly volume, but the general movement is confined principally to withdrawals on old contract orders. Very little, if any, new business is being transacted at present, due chiefly to the fact that the consumers appears to be playing the waiting game in the hopes that the proposed new tariff changes will be passed to become a law and that same will be of great benefit to them.

PULP.

Ground wood, No. 1, $16 per short ton, f.o.b. mill.
Ground wood, No. 2, $14 per short ton, f.o.b. mill.
Unbleached sulphite, domestic, $2.15 to $2.30 delivered.
Bleached sulphate, domestic, $3.00 to $3.15, delivered.
Unbleached sulphite, imported, $2.05 to $2.30, ex dock, N.Y.
Bleached sulphite, imported, $3 to $3.25, ex dock, N.Y.
Bleached sulphate, imported, $2.60 to $3, ex dock, N.Y.
Unbleached sulphate, $1.90 to $2.10, ex dock, N.Y.
Bleached soda pulp, domestic, $2.15 to $2.35, delivered.
Kraft pulp, imported, $2.05 to $2.20, ex dock, N.Y.

PAPER.

A careful analysis of the local paper market fails to reveal anything of extraordinary importance. Consumers are buying supplies, but chiefly in small quantities, and jobbers in turn are ordering from the mills in only sufficient quantities to fill their actual requirements. Everybody appears to be awaiting the outcome of the Underwood Tariff Bill, and, in consequence, business in the paper industry, in sympathy with general business conditions, is very light at present. In some grades business is said to be particularly good, but in other lines it is far behind previous records for this period. Though newsprint continues to be subjected to very keen competition, prices are being held reasonably firm. Your correspondent this week had a lengthy talk with the sales manager of one of the biggest news manufacturers in the United States, who stated that business with his concern was far ahead of all previous records and that though competition was making some inroads on them, they were not lowering their prices, and were not making contracts under 2.05 cents f.o.b. shipping point, or 2.20 cents f.o.b. mill on transient business. The coarser grades of paper, with the exception of krafts, are all quiet and uninteresting. The mills say they are pretty well filled with orders, but there appears to be very little new business in the market. Book papers are passing in moderate volume, though local manufacturers all say that movement is not quite up to expectations for this time of the year. Trading in this line, as in the other grades, appears to be in sympathy with the general trend of business. Movement in coated book is very light, but this seems to bear no significance as substitutes are gradually making inroads on the coating grade. Screenings are very active, and it is almost impossible for local distributors to obtain enough to fill their requirements. White

tissues, also, are in quite active inquiry. One jobber stated this week that the recent floods in the middle west had taken quite a lot of tissues out of the market and that at present he had over five cars booked for shipment as soon as he could get the stocks. Board men say their business reflects a seasonable tone—business being neither good nor bad. The supply is sufficient to meet the requirements, though there are no heavy supplies in local hands. Prices in all descriptions remain relatively the same, and with several minor changes, are repeated as follows:

Quotations throughout the list are without change, and are repeated, as follows:

News, rolls, transient business, $2 to $2.20, f.o.b. mill.

News, rolls, contract renewals, $1.95 to $2.05, f.o.b. mill.

News, sheet, $2.15 to $2.25, f.o.b. mill.

Book papers, car lots, C. & S. C., $4 to $4.20, f.o.b. mill.

Book papers, car lots, M.F.S., $3.75 to $3.90, f.o.b. mill.

Writing paper, superfine, 11c to 13c, delivered east of the Mississippi River.

Writing paper, extra fine, 10½c, delivered east of the Mississippi River.

Writing paper, No. 1 fine, 9c, delivered east of the Mississippi River.

Writing paper, No. 2 fine, 8c, delivered east of the Mississippi River.

Writing paper, engine sized, 4½c to 8c, delivered east of the Mississippi River.

Bond paper, 6c to 24c, delivered east of Mississippi River.

Linen paper, 7c to 18c, delivered east of Mississippi River.

Ledger paper, 8c to 30c, delivered east of Mississippi River.

Manila, jute, 4¼c to 5c, delivered.

Manila, wood, $2.40 to $2.80, delivered.

Kraft, No. 1, $3.65 to $4.02½, f.o.b. mill.

Kraft, No. 2, $3.27½ to $3.77½, f.o.b. mill.

Screenings, $1.75 to $2.12½, delivered.

Boxboards, news, $31 to $33 per ton, delivered.

Boxboards, chip, $30 to $32 per ton, delivered.

Boxboards, straw, $32 per ton, delivered.

Wood pulp board, $42.50 to $45 per ton, delivered.

Tissue, white, cylinder, 42½ to 45c, delivered.

Tissue, fourdrinier, 45c to 50c, delivered.

Tissue, jute manila, 50c to 55c, delivered.

Meb.

NORWEGIAN TRADE.

The Norwegian Trade Paper Farmand says in its issue of March 15:

The great rainfall in the second half of last year in all countries of the northern hemisphere filled the rivers to overflowing, and the mechanical wood pulp mills have, therefore, produced more pulp in the winter months than they had calculated upon. In the beginning of the current year some of the mills found themselves with stocks accumulating. The shipping season in the upper gulf continued much longer this winter than is usually the case, and just before the close freights declined of which some of the north of Sweden mills availed themselves to press prompt pulp on the market.

Under these circumstances the market for mechanical pulp collapsed during February after a quiet and inactive January. After falling to $8.80 and $8.53, prices occasionally dipped below the last-mentioned miserable figure. From exhaustive inquiries which we have made this week it would appear, however, that the very extensive sales of the last weeks have cleared the market of surplus stock; it is not any longer possible to buy at $8.53.

The forest owners of Norway are in no mood to reduce their prices, and with current log prices it is doubtful whether Norwegian makers generally get their money back at $8.53. Nobody can tell how long time it may take before this market recovers, but when selling prices have come down to or below cost or production they must react, sooner or later.

Sulphite, cellulose remains firm, because the consumption fully absorbs the current production; the moderate addition to the output, which will be caused by various extensions of existing mills that are in progress, will hardly be sufficient to meet the regular growth of consumption.

The latest Swedish pulp quotations are:

	Per ton net.	
Mechanical, moist, white	$8.27	to $8.80
Mechanical, dry, white	19.73	20.80
Sulphite, prime, easy bleached	41.28	42.67
Sulphite, prime, strong	38.67	40.00
Sulphate, easy bleached, ordinary	36.00	37.33
Sulphate, strong	36.00	38.67

All f.o.b. Swedish ports.

TARIFF HAS BEEN CHANGED SLIGHTLY.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., May 8, 1913.

The House of Representatives adjourned here shortly after 11 o'clock last night without finally voting on the new Tariff Bill, due to filibustering tactics on the part of the Republicans. Work, however, on the bill is practically complete, and the bill, as it stands amended to-day (H. R. 3321) differs in a number of important points from the tariff measure (H. R. 10) which was introduced in the House of Representatives at the opening of the extra session on April 7. Approximately twenty-seven revisions of rates are noted in the entire bill.

In the following table are presented the rates of duty levied by the Tariff Act of 1909 and the new bill upon articles used directly and indirectly in the manufacture of paper:

	Act of 1909.		H. R. 3321.	
	Rate.	Equivalent Ad valorem.	Rate.	Equivalent. Ad valorem.
		%		%
Schedule A—Glue, val. bet. 10 and 25c. lb.	25%	25.00	15%	15.00
Schedule B—China clay, or kaolin	$2.50 ton	38.51	$1.25 ton	19.23
Schedule M—Pulp, paper and books—				
Printing paper, val. over 2½c. lb.	....	15.80	12%	12.00
Copying paper stereotype paper, etc.	....	42.33	30%	30.00
Bags, envelopes, etc.	.5c. per lb. plus 30%	49.92	35%	35.00
Surface-coated paper	....	50.00	35%	35.00
Parchment and imitation parchment	.2c. per lb. plus 10%	47.94	35%	35.00
Photographic paper	....	28.99	25%	25.00
Writing paper	....	45.13	25%	25.00
Wrapping paper, n.s.p.f.	35%	35.00	25%	25.00

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2-1500 K. W. Regina	1-750 K. W. N. S. Steel & Coal Co.	1-400 K. W. Lethbridge
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Below is presented a comparison of the old and new tariff rates on schedule M. The rates contained in the new bill are, compared with those of the present law. The list accurately portrays the character of the new bill:

	Present Tariff.	New Tariff.
Wood pulp	1/12c. lb.	Free.
Print paper under 2½c.	3/16c. lb.	Free.
Print paper, over 2½c.	.....	12 per cent.
Copying paper	5c lb. plus 15% up	30 per cent.
Coated paper	5c. lb.	25 per cent.
Pictures, calendars, etc.	20c. lb. up	15% up
Writing paper	3c. lb.plus 15% up	25 per cent.
Envelopes	35%	15 per cent.
Books	15c. lb. plus 25%	15 per cent up
Other manufactures of paper	35%	25 per cent.

The following paragraphs in the paper and pulp schedules have witnessed more or less changes since the original bill was introduced in the House. Changes are noted in italic:

330. Printing paper (other than paper commercially known as handmade or machine handmade paper, japan paper, and imitation japan paper by whatever name known) unsized, sized, or glued, suitable for the printing of books and newspapers, but not for covers or bindings, nor especially provided for in this section, valued at 2½c. per pounds, 12 per centum ad valorem; provided, however, that if any country, dependency, province, or other subdivision of government shall impose any export duty, export license fee, or other charge of any kind whatsoever (whether in the form of additional charge or license fee or otherwise) upon printing paper, wood pulp, or wood for use in the manufacture of wood pulp, there shall be imposed upon printing paper, *valued at above 2½ cents per pound,* when imported either directly or indirectly from such country, dependency, province, or other sub-division of government, an additional duty equal to the amount of such export duty or other export charge imposed by which country, dependency, province or other sub-division of government; upon printing paper, *or upon an amount of* wood pulp, or wood for use in the manufacture of wood pulp.

331. Papers commonly known as copying paper, stereotype paper, bibulous paper, tissue paper, pottery paper, letter copying books, wholly or partly manufactured, crepe paper and filtering paper *weighing not more than ten pounds per ream of* 480 *sheets,* and articles manufactured from any of the foregoing papers or of which such paper is component material of chief value, 30 per centum ad valorem.

332. Papers (including wrapping paper with coated surface, or surfaces, not specially provided for in this section, including wrapping paper, with the surface decorated or covered with a design, fancy effect, pattern, or character, whether produced in the pulp or otherwise, but not by lithographic process, whether or not wholly or partly covered with metal or its solutions (except as hereinafter provided) or with gelatin or flock, or embossed, or printed), *including wrapping paper, with coated surface or surfaces, or with the surface wholly or partly decorated with a design, fancy effect, pattern, or character, whether produced in the pulp or otherwise; all of the foregoing not specially provided for, whether or not wholly or partly covered with metal or its solution or with gelatin or flock or embossed or printed, except by lithographic process;* cloth lined or embossed paper, parchment paper, and greaseproof and imitation parchment papers which have been supercalendered and rendered transparent, or partially so, by whatever name known; all other greaseproof and imitation parchment papers, not specially provided for in this section, by whatever name known; bags, envelopes, printed matter other than lithographic, and all other articles composed wholly or in chief value of any of the foregoing papers not specially provided for in this section, and all boxes of paper or wood covered with any of the foregoing paper, 35 per centum ad valorem; albuminized or sensitized paper or paper otherwise surface coated for photographic purposes, plain basic papers for albuminizing or sensitizing, baryta coating, or for photographic solar printing processes, 25 per centum ad valorem.

333. Pictures, calendars, cards, labels, flaps, cigar bands, placards, and other articles composed wholly or in chief value of paper lithographically printed in whole or in part from stone, metal, or *other* material (other than gelatin) (except boxes, views of American scenery or objects, and music, and illustrations when forming part of a periodical or newspaper, or bound or unbound books, accompanying the same, not specially provided for in this section) shall pay duty at the following rates: Labels, flaps, and cigar bands, if printed entirely in bronz printing, 15 per centum ad valorem; if printed otherwise than entirely in bronz printing, but not printed in whole or in part in metal leaf, 25 per centum ad valorem; if printed in whole or in part in metal leaf, 30 per centum ad valorem; booklets, books or paper or other material for children's use, not exceeding in weight 24 ounces each, fashion magazines or periodicals, printed whole or in part by lithographic process, or decorated by hand, booklets, decorated in whole or in part by hand or by spraying, whether or not lithographed, 12 per centum ad valorem; decalcomanias in ceramic colors, whether or not backed with metal leaf, and all other decalcomanias, except toy decalmomanias, 20 per centum ad valorem; pictures, calendars, cards, placards, and all other articles than those hereinbefore specially provided for in this paragraph, 20 per centum ad valorem.

335. Paper envelopes (not specially provided for in this section), folded or flat, *plain,* bordered, embossed, printed, tinted, decorated, or lined, 15 per centum ad valorem.

FREE LIST.

573. Printed paper (other than paper commercially known as handmade or machine handmade paper, japan paper, and imitation japan paper by whatever name known), unsized, sized, or glued, suitable for the printing of books and newspapers, but for covers or bindings, not specially provided for in this section, valued at not above 2½ cents per pound; *decalcomania paper not printed.*

652. Mechanically ground wood pulp, chemical wood pulp, unbleached or bleached, provided, that if any country, dependency, province, or other sub-division of government shall impose an export duty or other export charge of any kind whatsoever, either directly or indirectly (whether in the form of additional charge or license fee or otherwise), upon printing paper, mechanically ground wood pulp, chemical wood pulp, or wood for use in the manufacture of wood pulp, the amount of such export duty or other export charge *upon an equal amount of mechanically ground wood pulp, or chemical wood pulp, or upon an amount of printing paper ordinarily manufactured from such wood pulp* shall be imposed as a duty upon chemical wood pulp when imported directly or indirectly from such country, dependency, province, or other sub-division of government; that if any country, dependency, province, or other sub-division of government shall prohibit the exportation of printing paper, mechanically ground wood pulp, chemical wood pulp, or wood for the use in the manufacture of wood pulp, there shall be imposed a duty of one-tenth of one cent per pound upon chemical wood pulp when imported directly or indirectly from such country, dependency, province, or other sub-division of government.—Meb.

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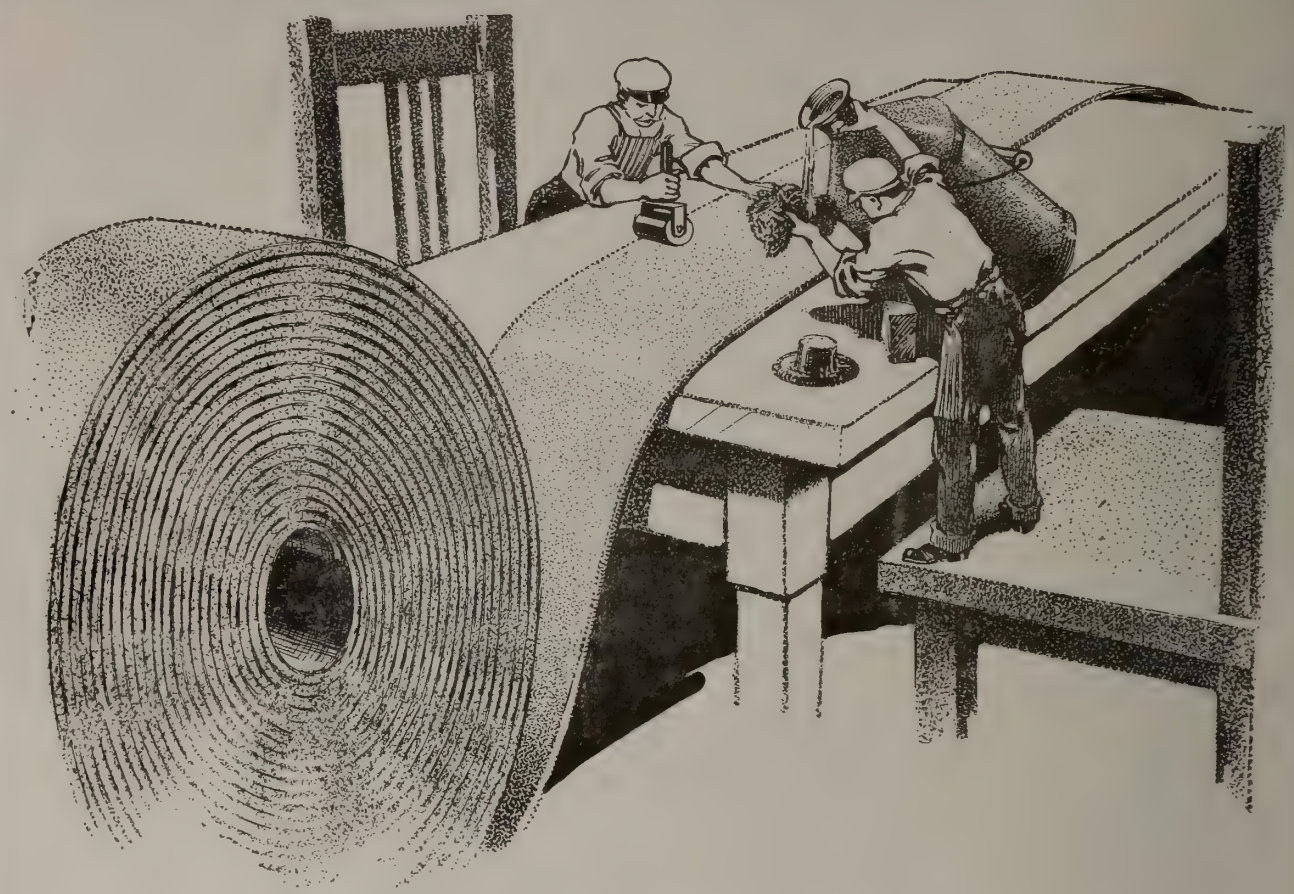
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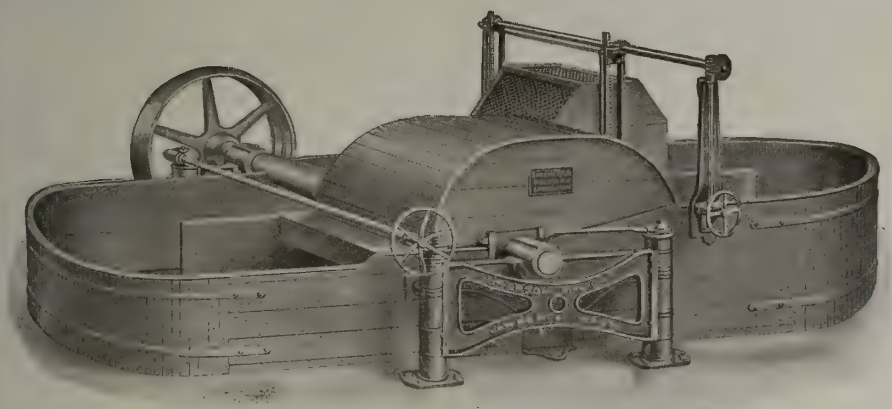
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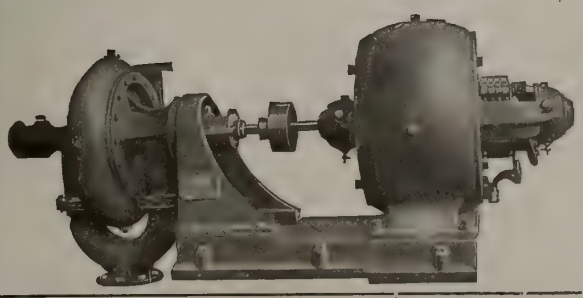
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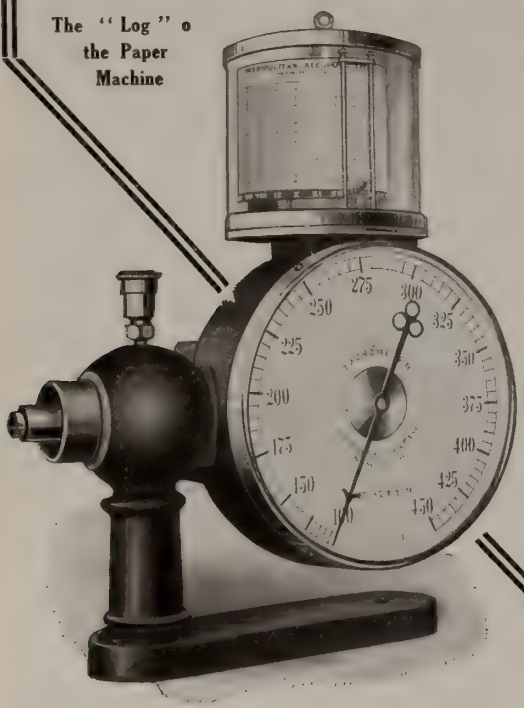
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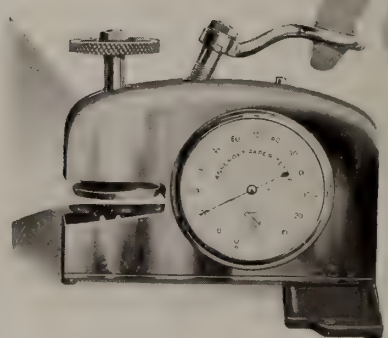


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This directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

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Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
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Waterous Engine Works, Brantford, Can.

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Marx, J. & Co., London, E.C., England.
Tippet Arthur P. & Co., Montreal, Can.

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Klipstein, A. & Co., Ltd., Montreal, Can.

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Calendar Rolls
Dillon Machine Co., Lawrence, Mass.
Farrell Foundry & Mach. Co., Ansonia, Conn.

Chemicals, Colors, Etc.
Brunner, Mond & Co., Montreal, Can.
Gewerkschaft Sachtleben, Homberg, Niederrheim, Germany.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter St., Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers
Can. Boving Co., Toronto.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Valley Iron Works, Appleton, Wis.

Chip Screens—
Carthage Machine Co., Carthage, N.Y.

Cranes
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.

Conveying Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Can.

Cutters
West End Engine Works, Edinburgh, Scotland.
Dillon Machine Co., Lawrence, Mass.
Chambers & Simpson, Toronto.

Cylinder Covers—
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Dandy Rolls—
Johnson & Sons, C. H., St. Henry, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining
Can. Boving Co., Toronto.
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Evaporators
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.
Zaremba Co., Buffalo, N.Y.

Experimental Machinery—
Marshall, T. J. & Co., Ltd., London, Eng.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Ayers, Ltd., Lachute Mills, Que.
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Heimbach, Thos. Jos., Ltd., Duren, Germany.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordans
Appleton Machine Co., Appleton, Wis.
Jones, E. D. & Co., Pittsfield, Mass.
Process Engineers, Ltd., Montreal, Canada.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

Jute Cloth
Wardlaw, T. D., Toronto, Ont.

Laying Machines
Chambers & Simpson, Toronto.
Collis & Sons, J., London, Eng.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Jenckes Machine Co., Sherbrooke, Can.

MILL SUPPLIES CONTINUED

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines

Twines
Wardlaw, T. D., Toronto, Ont.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines
Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.

MILL SUPPLIES CONTINUED

Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste
Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Rooth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—
Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., Montreal Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—
McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—
Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—
Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Book and Litho.—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal, Que., "Art Photo Book", "Tinted Art Book", "Art Chromo" "English Book", "Satin Book", Satin Litho", "Litho Label", "Super S. C. Book", "Standard S. C. Book", "Windsor Book."
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Ritchie & Ramsay, Toronto, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
St. Lawrence Paper Mills Co., Ltd., Mille Roches, Thorold.
Toronto Paper Mfg. Co., Cornwall, Ont.

Box Board—
Jonquiere Pulp Co., Jonquiere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,

Deputy Minister.

Department of the Interior, Ottawa,

December 20th, 1912.

PAPER MILLS CONTINUED

Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Corrugated Paper—
Lazier Paper Mills, Ltd., Belleville.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
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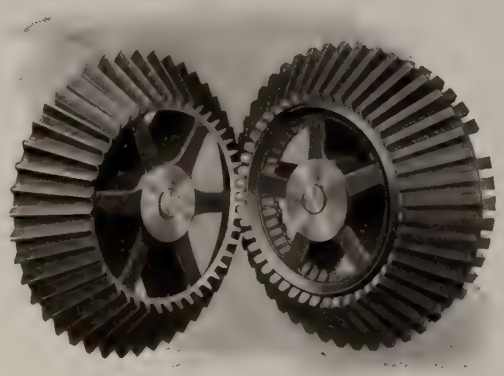
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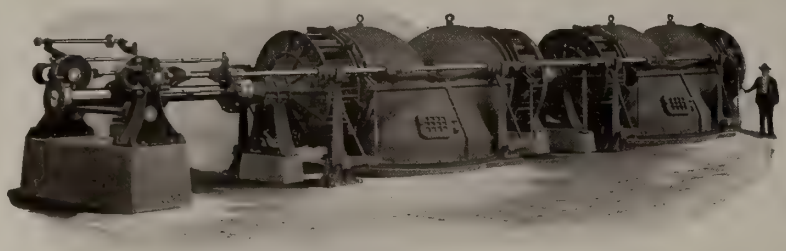
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Our sizings are cleaned by our new patented process and we guarantee this size to be absolutely clean, without the least speck of impurity in the same, preventing thereby black specks in the paper.

We are shipping our size in barrels or tank-cars.

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One unit of six with a total capacity of 13,100 Horse Power furnished for the new plant of J. R. Booth, Ottawa, Ontario. We build Turbines for any power for heads from 3 to 600 feet.

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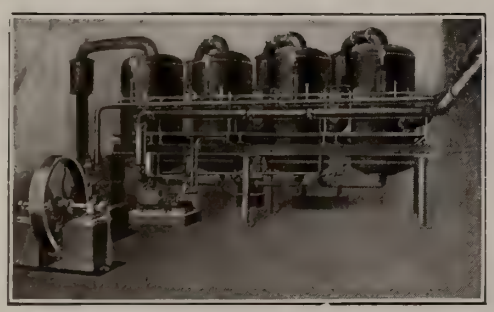
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HAMILTON, OHIO, U.S.A.

Builders of the Best PAPER and PULP MILL MACHINERY

Our Specialty — Complete PAPER MAKING MACHINES of both FOURDRINIER and CYLINDER Type for all kinds of paper and board



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Spent Liquors give the Maximum Economy and Efficiency

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SPECIALTIES—High-class WET, PRESS and DRY FELTS, Specially Designed to Leave NO MARKS on the Paper. FELTS for FAST RUNNING Machines.

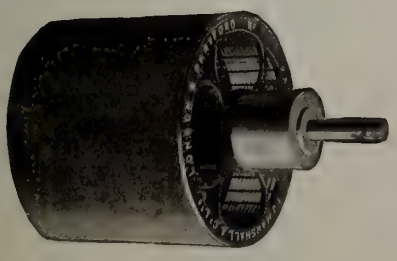
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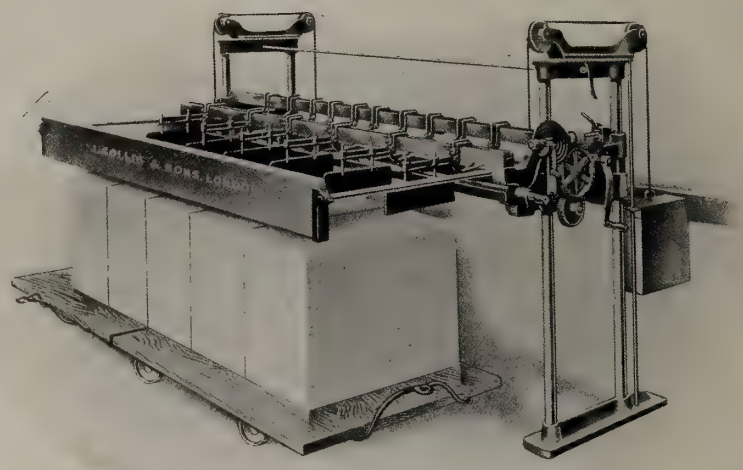
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CAN BE FITTED TO ANY TYPE OF CUTTER AND WILL LAY FROM A TISSUE TO A CARD, ROUGH, GLAZED, BROWNS, CHROMO OR ENAMELS AND NEWS AND ANY NUMBER IN THICKNESS.

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SCIENNES - - EDINBURGH

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Builders of the Highest Class

PAPER MILL MACHINERY



One of Our Latest Canadian Machines

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40,000 CORDS OF PULP WOOD STORED, STACKED AND RECLAIMED BY AN 1800 FOOT JEFFREY WIRE CABLE CONVEYER

The wood is delivered to storage by cable on the upper run and reclaimed by the return cable which travels underneath the pile.

This type of conveyer is our standard equipment for handling pulp wood. They have greater efficiency, are more economical in operation and cost less to install and maintain than any other conveyer used.

Write for Bulletin 33

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Employment Bureau

CANADIAN PULP AND PAPER ASSOCIATION

A bureau has been established which will furnish names of good, reliable and competent men to any mill or office needing help in any position. The credentials of all men are approved by the Association before being recommended to any mill.

THIS BUREAU IS FREE

to any pulp and paper mill in Canada, and to all men wanting new employment or a change. Sketches of past record should be submitted with all applications.

211 McGILL STREET - MONTREAL

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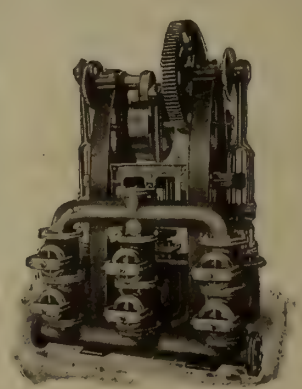
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The Smart-Turner Machine Co., Limited

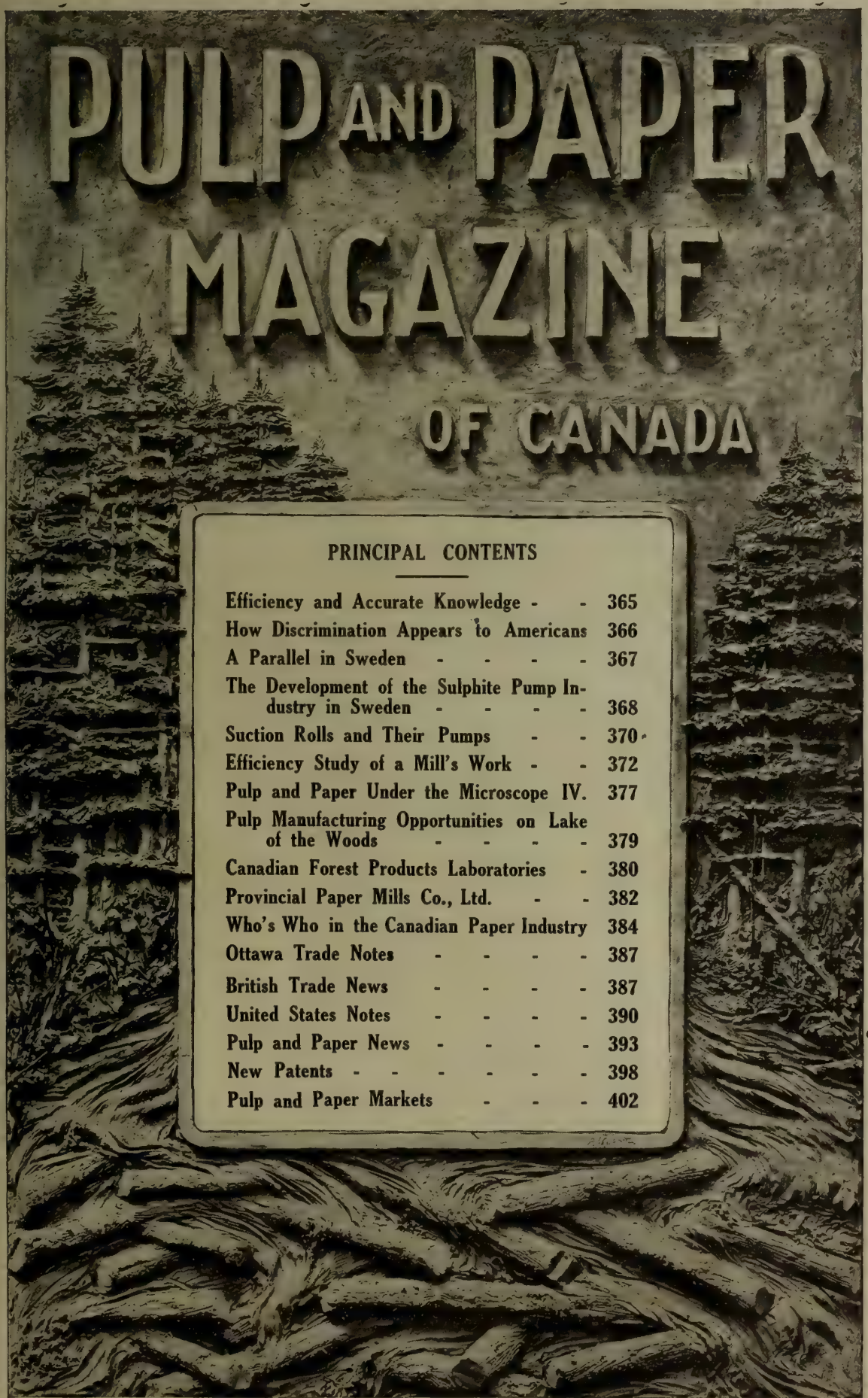
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VOL. XI. TORONTO, JUNE 1, 1913 No. 11

PULP AND PAPER MAGAZINE OF CANADA



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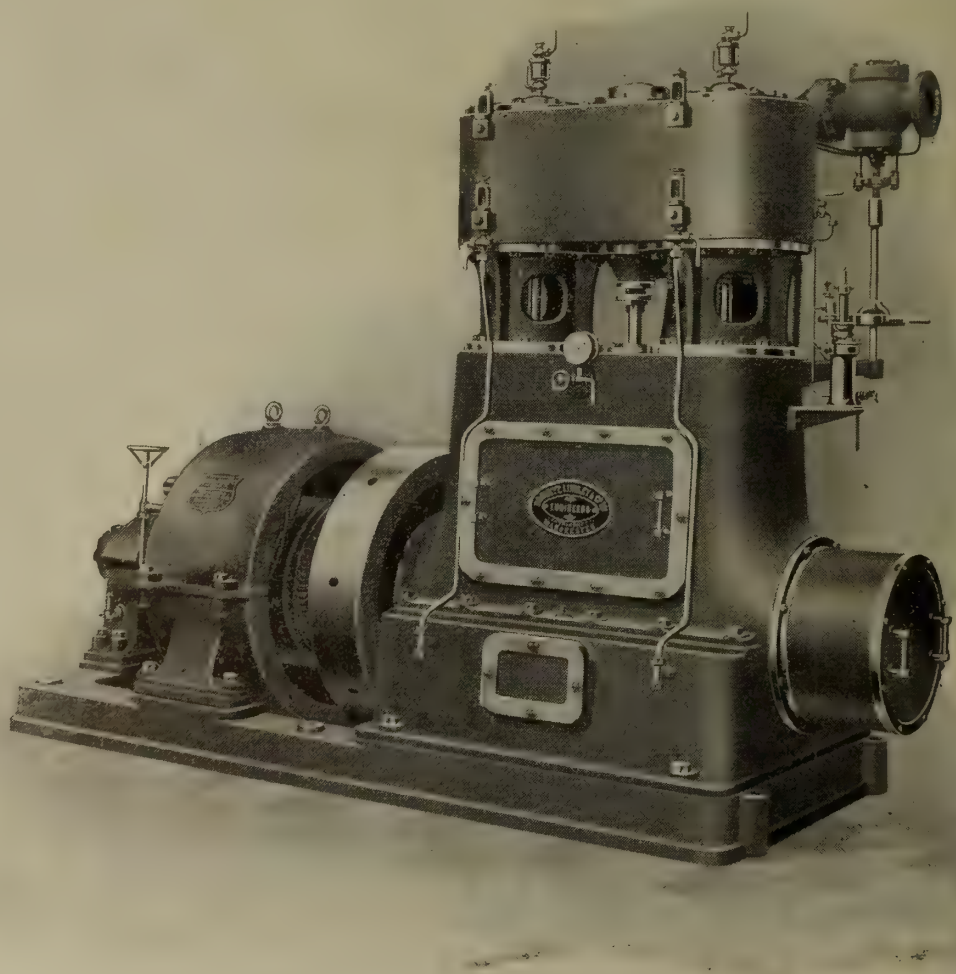
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BROWETT-LINDLEY & CO., LTD., Manchester, Eng.

These engines are simple in construction and all parts are easily accessible. Owing to the efficient system of lubrication and perfect balance of the moving parts the engines run silently and steadily under all conditions of load. They are as simple as can be manufactured to give great economy com bined with high efficiency. We can refer to scores of highly satisfactory installations in electric power and tramway plants, collieries, cotton and paper mills, steel and iron works, etc.



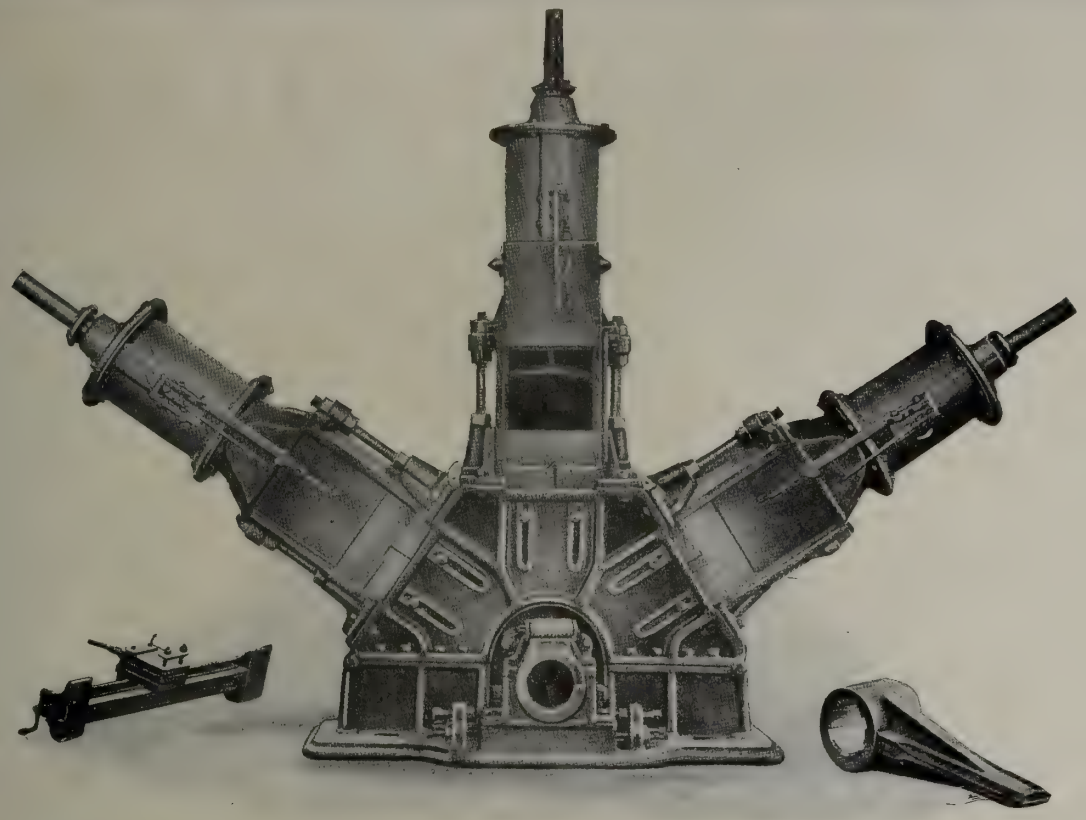
" Browett-Lindley " two-crank, compound, central valve, forced lubrication engine, driving electric generator

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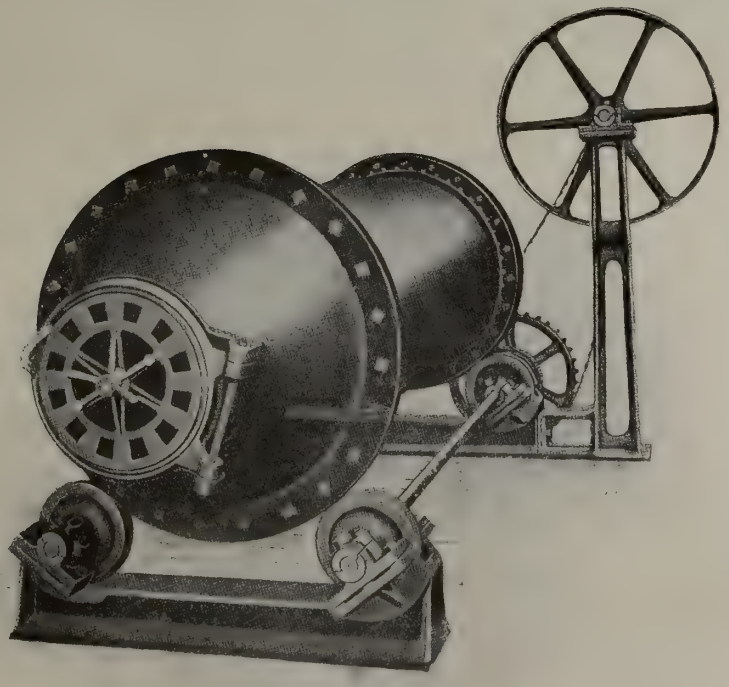
Canadian Pulp Mill Machinery Co., Limited

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Manufacturers of

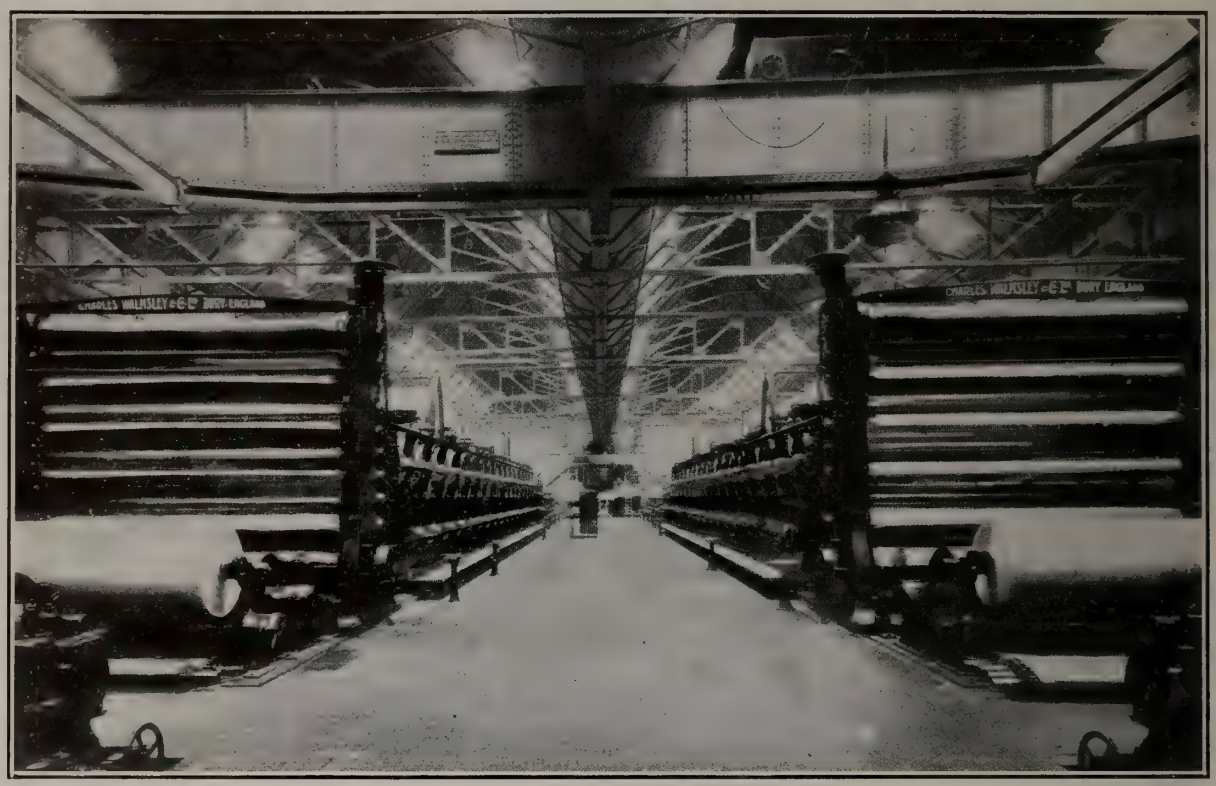
Grinders, Wet Machines, Screens and Sulphur Burners.

Full Specifications and Prices furnished on application.



Rotary Sulphur Burner

Interior of the MACHINE ROOM of MESSRS. EDWARD LLOYD, LTD., SITTINGBOURNE, ENGLAND, containing the last two machines supplied to this Company by Chas. Walmsley & Co, Ltd.



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Head Offices,
ATLAS WORKS
Branch,
WOOD STREET

Codes, WESTERN UNION, A.B.C. 5TH EDITION, McNEILL'S 1908

Telegrams, "PUMPS, BURY." *Telephone,* BURY 499

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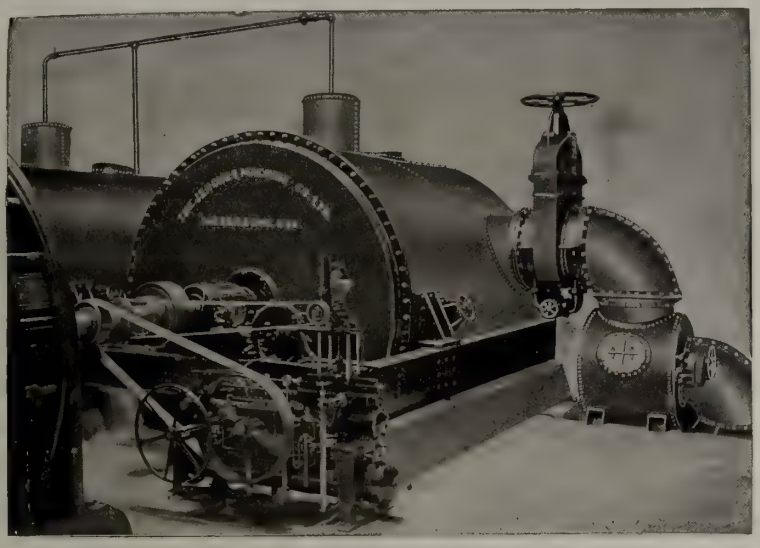
Complete Paper Mill Plants
Variable Speed Enclosed Steam Engines
Cone Beaters for News Stock
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Beating and Refining Engines
Super Calenders
Buffing Machines, etc., etc.

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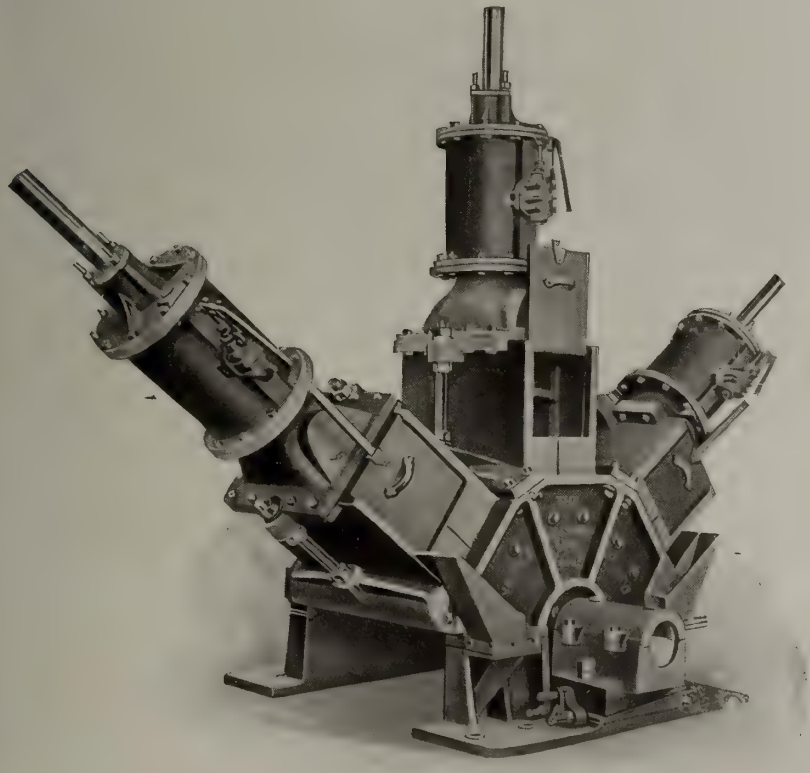
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CANADA:
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Pair of Special 38-inch Turbines

Direct connected to Electric Generator and developing 875 H.P., running 225 R.P.M. under 28 feet head.



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Air Compressors

Pulp Mill Machinery

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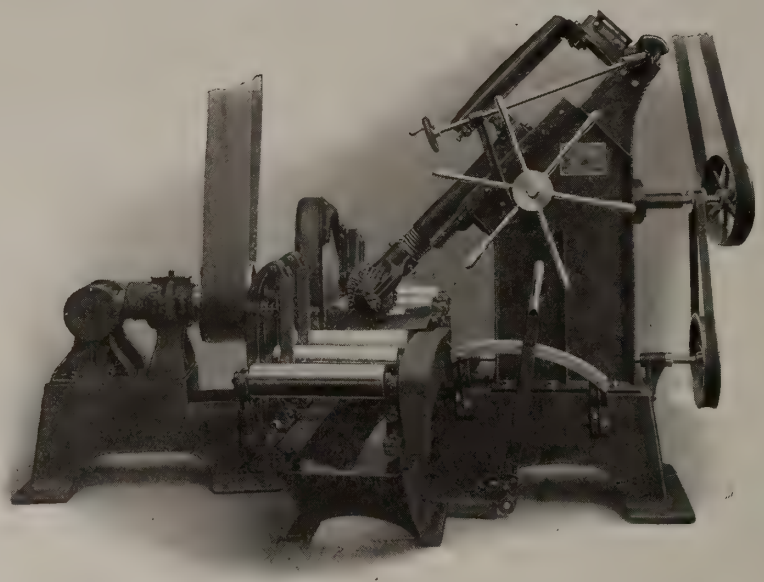
Estimates will be cheerfully furnished, and your correspondence is solicited.

The Jenckes Machine Company, Limited

General Offices: SHERBROOKE, QUE.

Factories: Sherbrooke, Que., St. Catharines, Ont.

Sales Offices: Sherbrooke, Montreal, St. Catharines, Cobalt, South Porcupine, Vancouver, Nelson, B. C.



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The present day is one of keen competition, which can only be met by the installation of the best material and labor saving machinery

The highest price machinery is usually the cheapest.

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SAULT ST. MARIE, ONTARIO

Fourdrinier Wires

Always the best — Only the best

All Widths

Wires held in Stock at Montreal

Wires held in Stock for prompt delivery

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All Sizes

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Nothing Better Made

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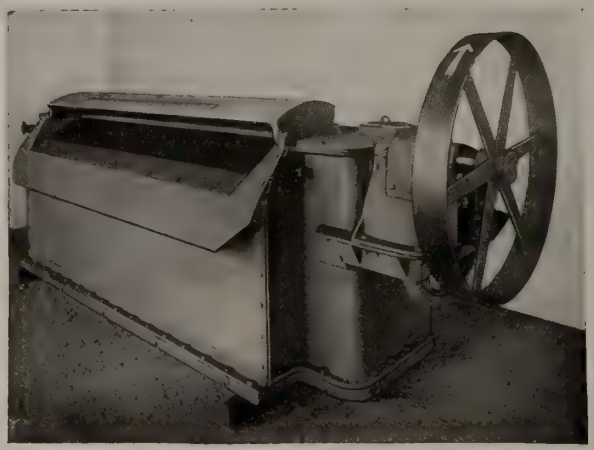
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The Standard Apparatus for Reclaiming Waste

PNEUMATIC PULP THICKENERS

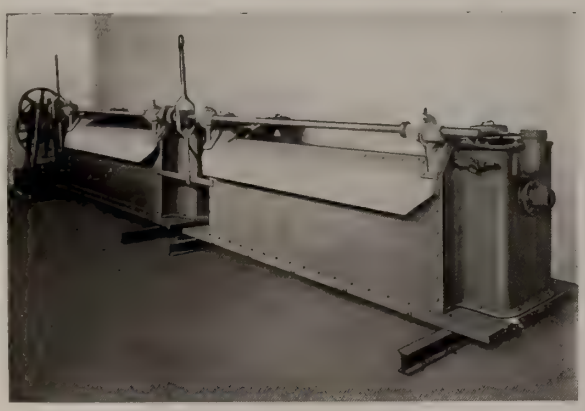
PNEUMATIC WATER FILTERS



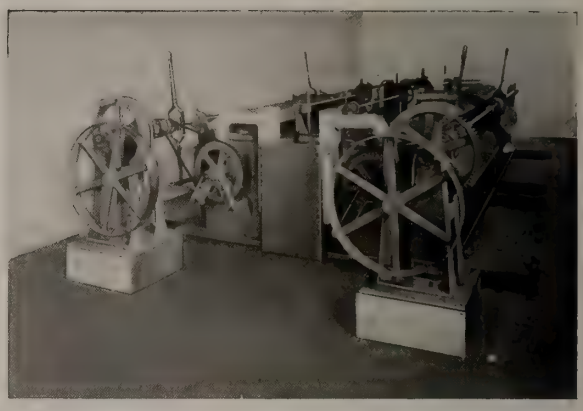
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THEY LIVE UP TO THEIR REPUTATION, EQUALLY AS VALUABLE TO THE SMALL MILL AS TO THE LARGE MILL



Two machines with battery drive.



Double line battery of four machines with spouting suction and blow complete.

THEY ACT AS—

AUTOMATIC WASTE DETECTORS

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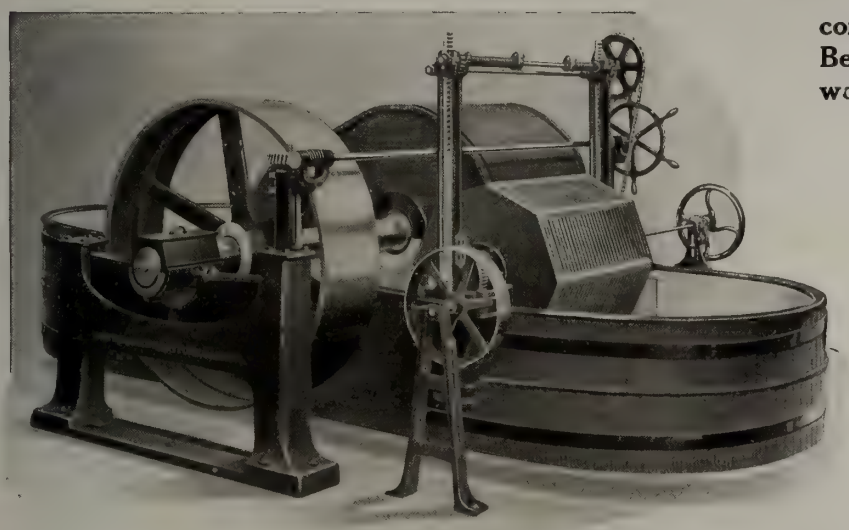
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combine the latest principles in Beating Engine design with honest workmanlike construction.

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Let your next beater be a Waterous.

Bulletin No. 208

The Waterous Engine Works Co., Ltd.

Home Office and Works, BRANTFORD, Ont.

Montreal Representatives, Phone Queens Hotel

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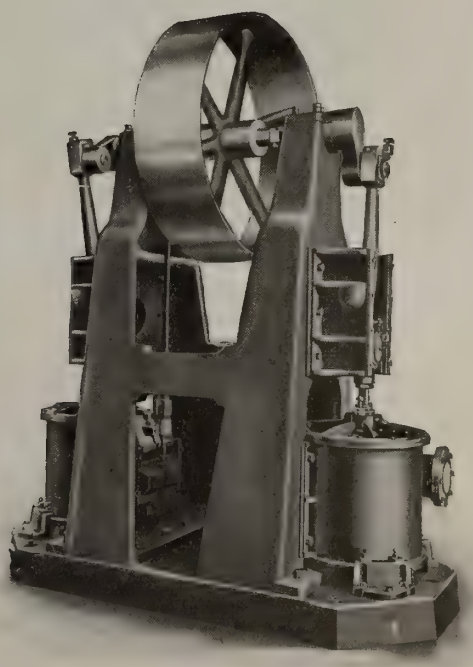
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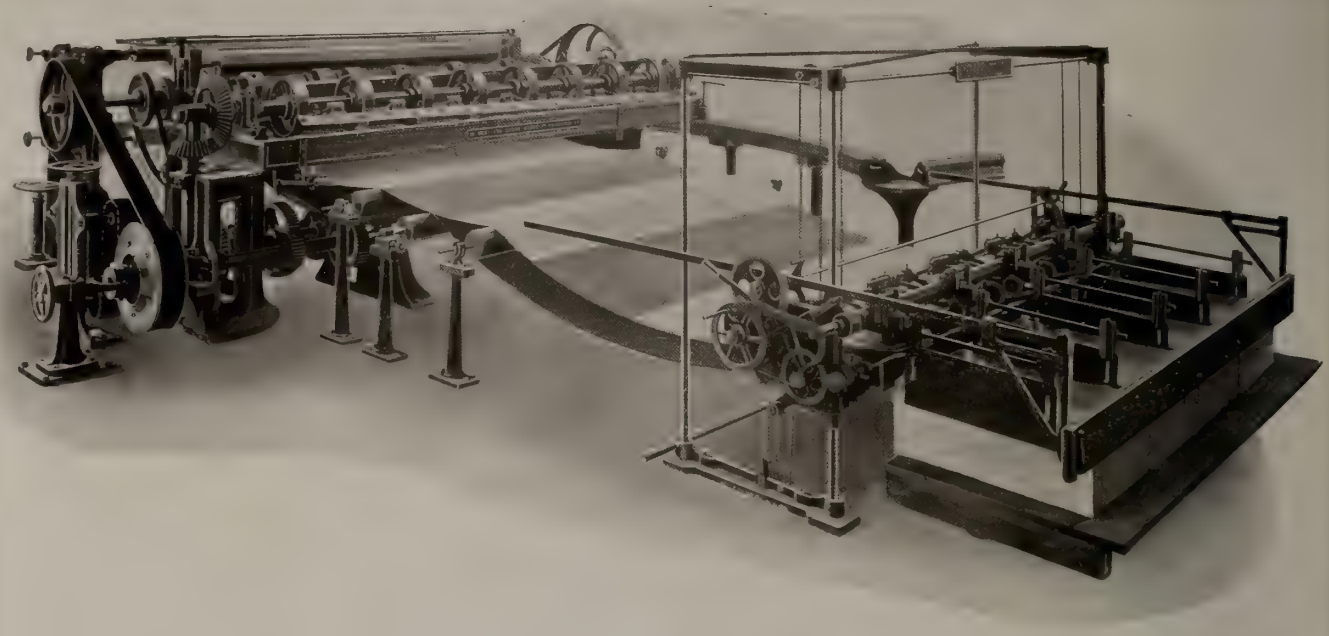
For Sulphite Mill Acid Systems this EXHAUSTER will give the best and longest service. There is no other Pump made that will compare with it.



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Lining for Sulphite Digesters

TOTAL THICKNESS ONLY 2½ TO 2¾ INCHES

Resists the action of the acid and ensures absolute protection to the Digester Plates.

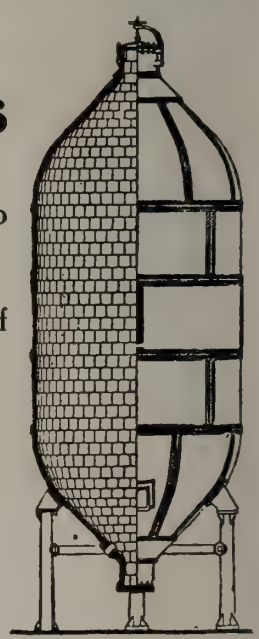
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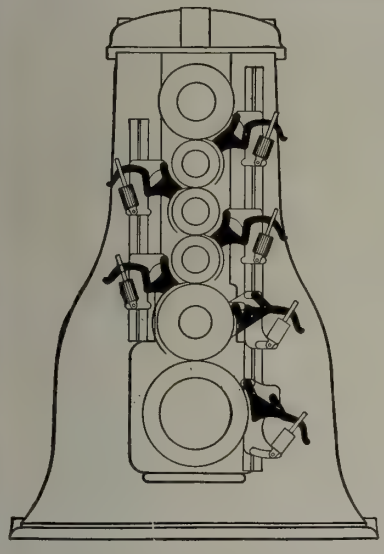
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Beating Engines

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Jordan's Three Sizes—Single, Double and Triple Stuff Pumps, with Dillon Patent Valve Seating

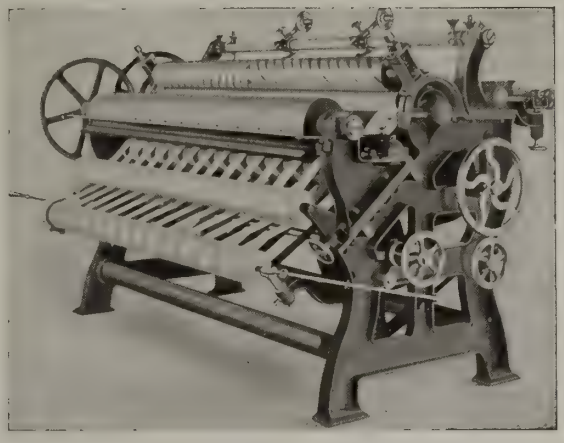
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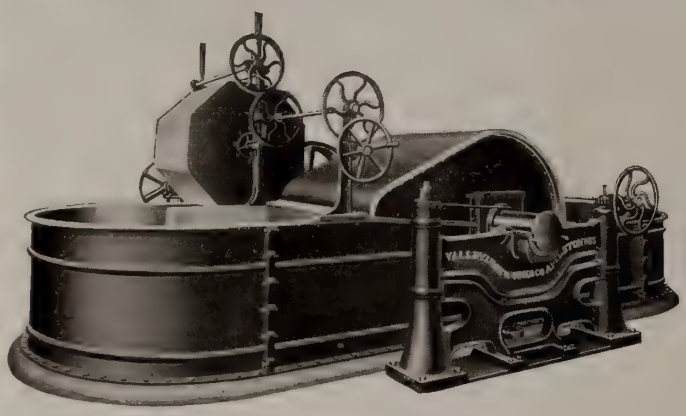
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for Beater Rolls and Bedplates in all types of Hollanders.
"Marshall" Refiners and "Jordon" Engines filled with this material are giving excellent results.

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Beating, Washing and Bleaching Engines. Barkers—Barker Attachments — Chippers—Rechippers—Chip Screens (Revolving)—

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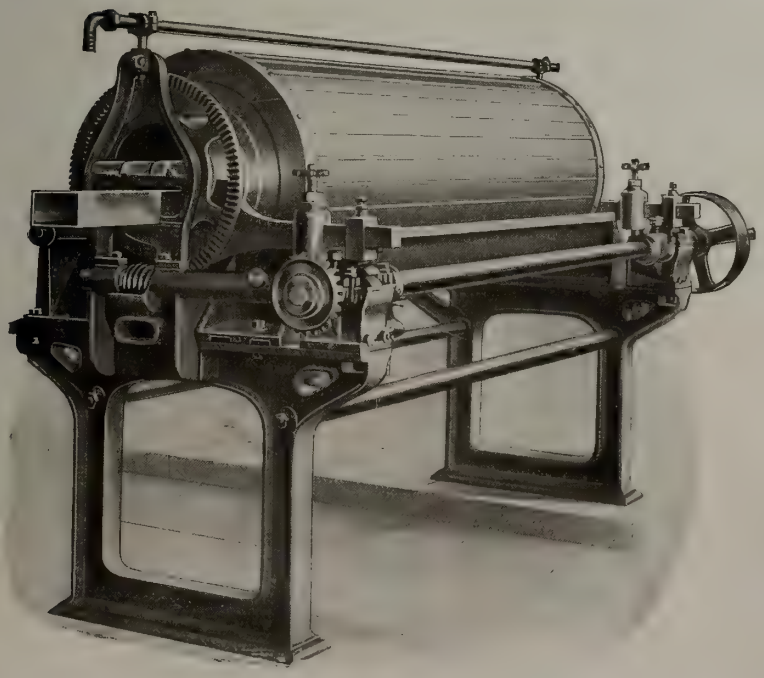
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R. Hamilton & Co., Bank of Ottawa Bldg., Vancouver, B.C.

Gorman, Clancey and Grindley, Calgary and Edmonton

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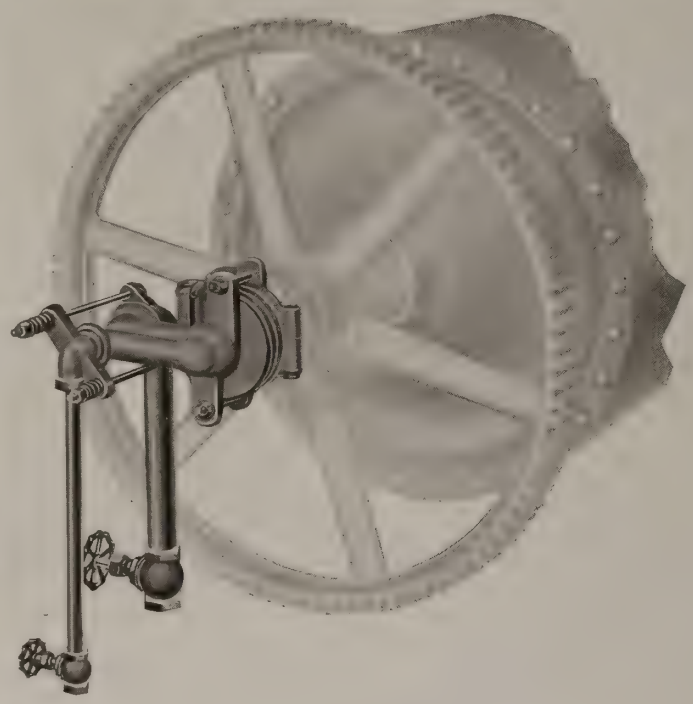
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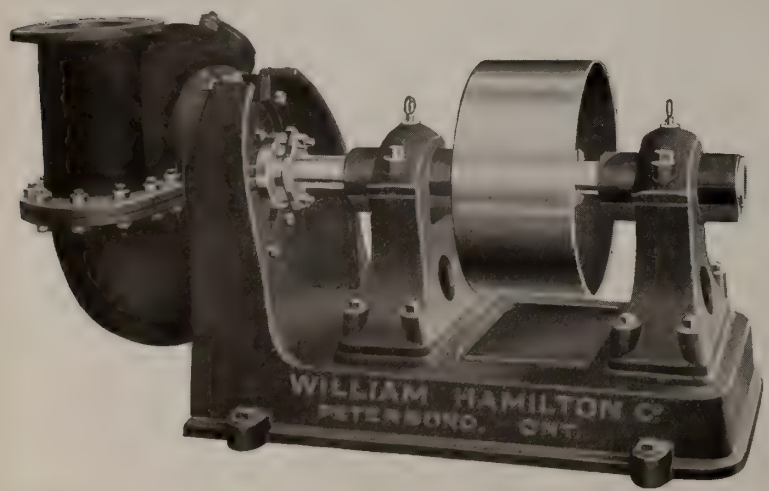
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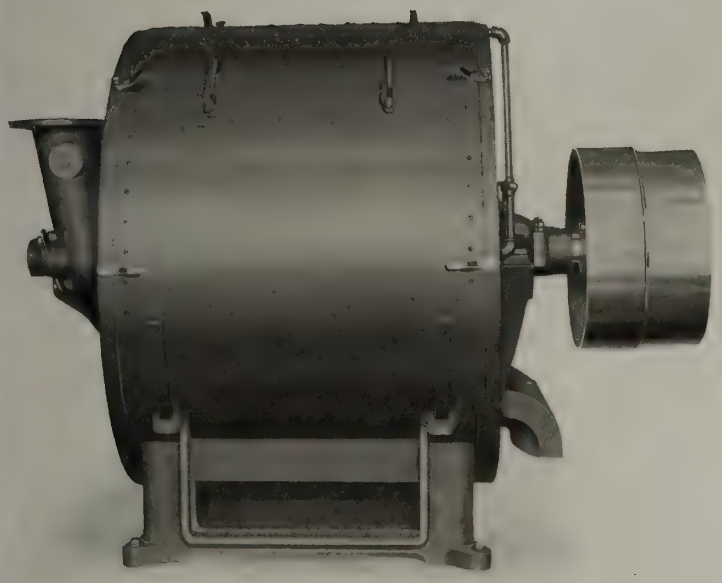
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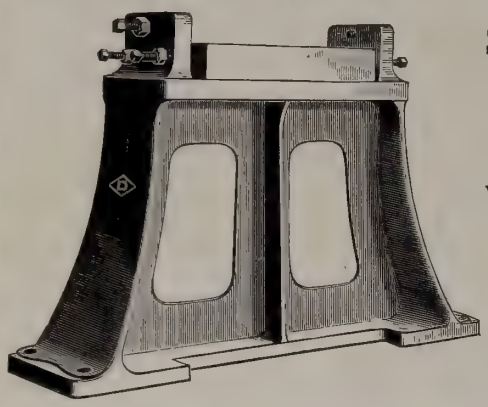
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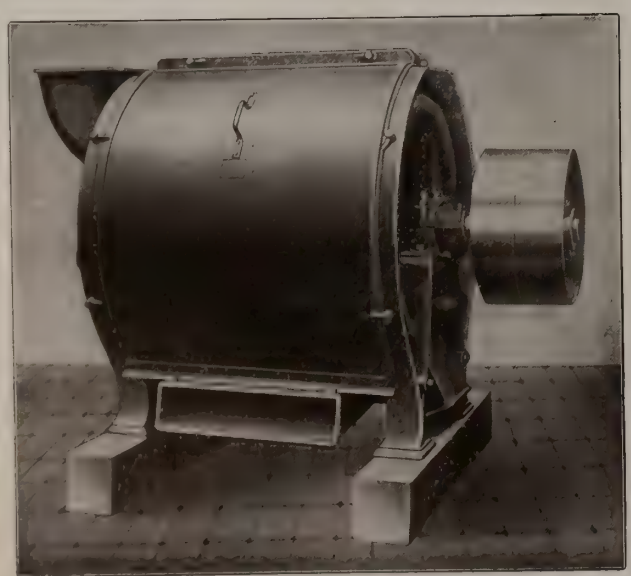
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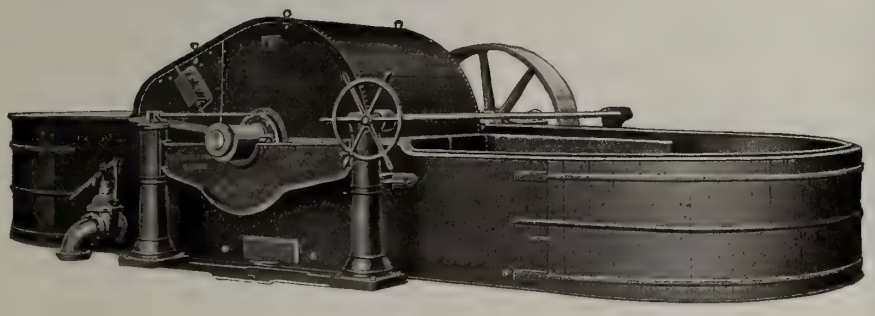
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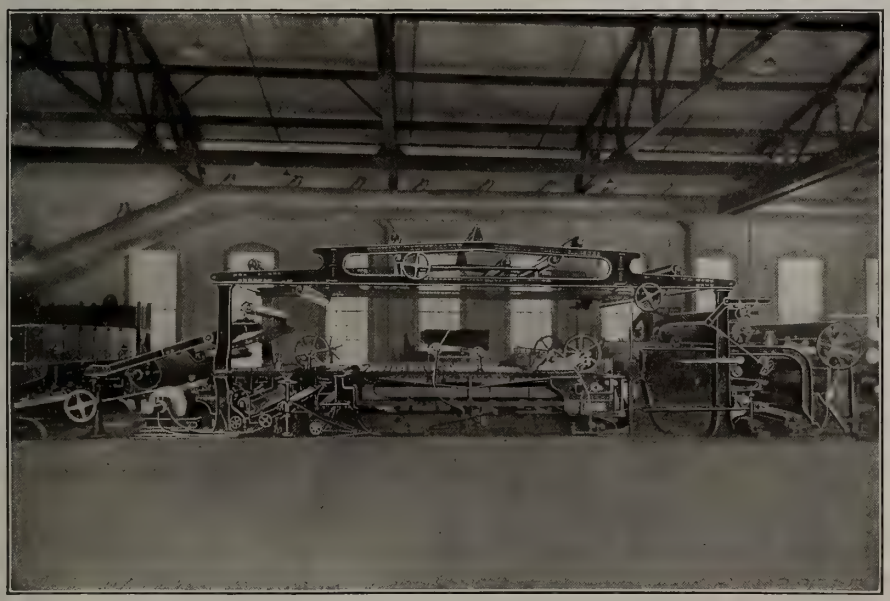
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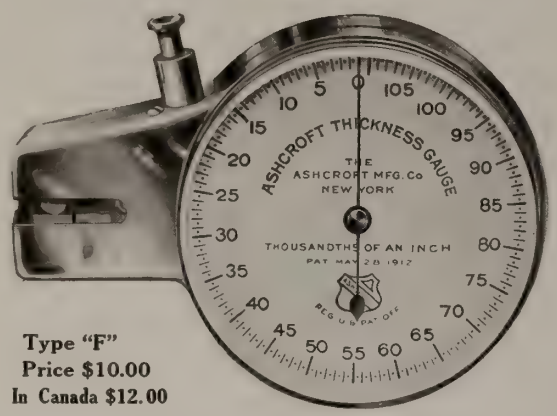
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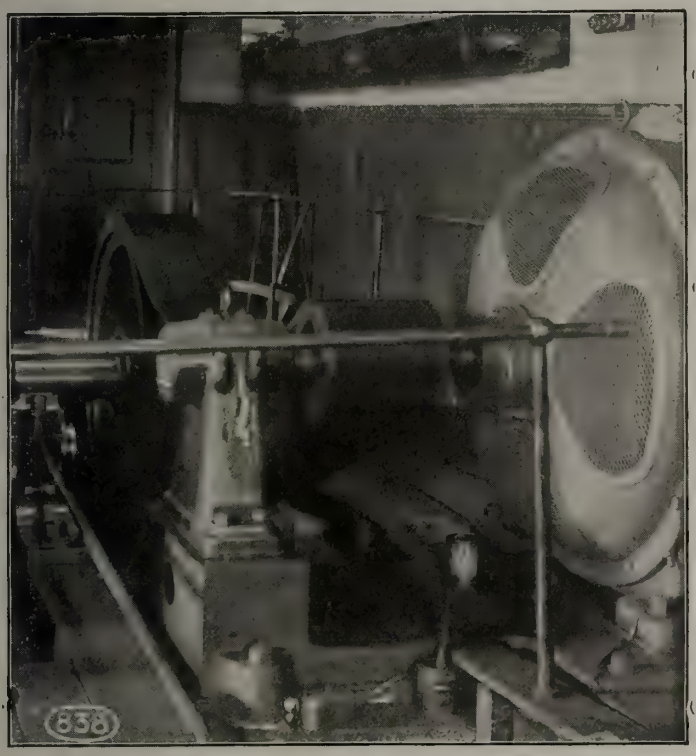
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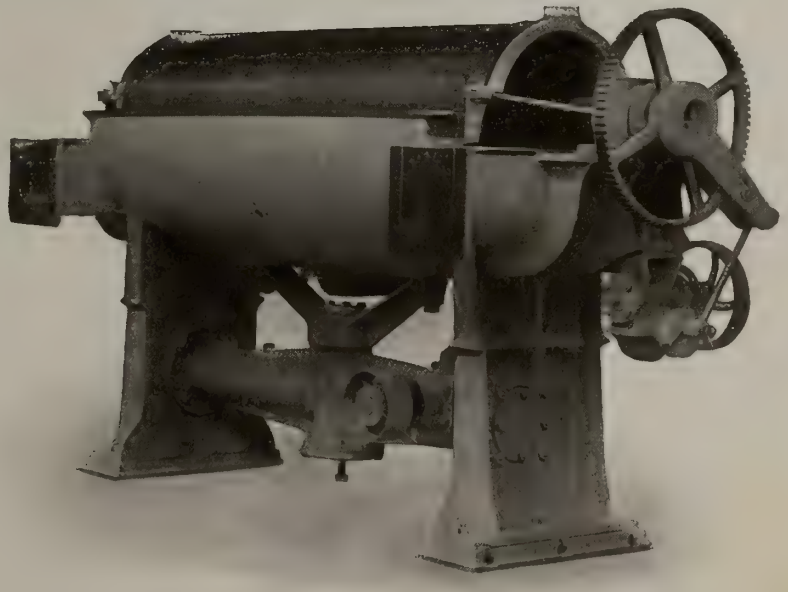
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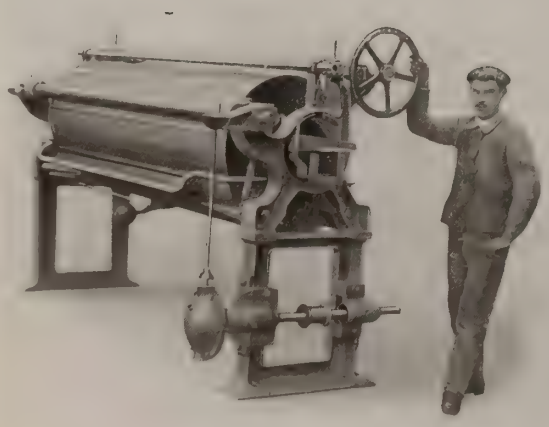
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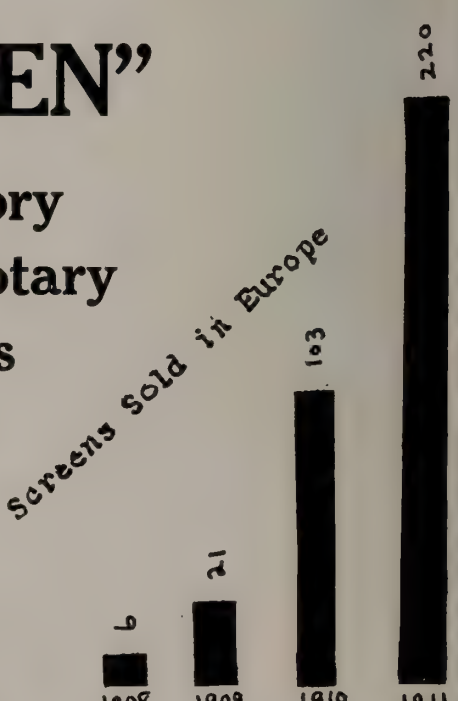


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VOL. XI. TORONTO, JUNE 1, 1913 No. 11

EFFICIENCY AND ACCURATE KNOWLEDGE

It is with great pleasure that we acknowledge the courtesy of Mr. Arthur C. Hastings, president of the American Paper and Pulp Association, in publishing in this issue a report obtained by his Association at great expense on one of the large wrapping mills of the United States. This report has been prepared by one of the best-known efficiency engineers in the United States and takes up the matter of the efficiency of a paper mill running on a five days' basis, using Saturday for repairs, as against the position taken by all our mills in Canada and most mills in the United States of running six days a week and making repairs on Sunday, paying time and a half or double time. To all manufacturers this report should be most profitable, and all our readers who are interested in developing a more efficient basis for paper mill operations.

The facts brought out therein are scientific facts of value, and are entirely new in the field of paper manufacture. It is a question with which few people would agree, we believe, that it really pays to operate a mill less than the six full days a week, rather than paying extra wages on account of repairs.

In as far as this report gives us accurate data it must be commended as highly valuable to the industry as a whole. There are very few paper mills in Canada who know exactly what their operation costs are. Many know at the end of the year what the balance sheets shows, but few know with any degree of accuracy the actual manufacturing costs as the mill goes along.

A further very fine example of efficiency and actual knowledge in mill operation has been furnished in recent investigations in engine sizing. The old recommendations by Wurster to add sufficient $Al_2 (SO_4)_3 + 18 H_2O$, until the reactions have been accomplished, has been found to be a most crude method of operating the sizing end of the paper mill. It is now known that the amount of alum required can be calculated to a nicety. 1° of hardness of the water used represents 1° gramme of CaO in 100,000 Cc. of water. The theoretical amount required is 0.36 Gm. of $Al_2 (SO_4)_3 + 18 H_2O$. To neutralize the hardness of ordinary water rather more than the theoretical amount is required. That is, instead of adding 40 grammes of aluminum sulphate to every 1,000 litres of water, 50 grammes should be added. The amount of alum required to neutralize the sodium resinate can easily be calculated as well. There must be an excess of aluminum sulphate sufficient to produce an acid reaction. This can easily be seen by the efficiency of the reaction of the pulp in the beater. Paper pulp often shows some calcium carbonate, in some instances only 0.2 to 0.5 per cent. (calculated on the dry mass), but at times it may run as high as 2 or even per cent. This will require an additional amount of aluminum sulphate to neutralize the calcium carbonate. For this reason it is necessary to determine the amount of calcium carbonate present in the pulp, which may be done by a simple method of titration, using methyl orange as indicator.

All this goes to show that often such a simple thing as the adding of alum to the beater should be done on an accurate and scientific basis. We need very much in Canada some accurate data on our mill operations and more scientific control in all our various steps in manufacture instead of the rule of thumb methods practised in the majority of cases.

HOW DISCRIMINATION APPEARS TO THE AMERICANS

The subject of our last editorial, in which we ventured to point out that the new American tariff is a gross discrimination against Canada, has been the subject of much comment on both sides of the line.

The Canadian manufacturers and others interested in the American tariff on examining the reading closely have all been unanimous in agreeing that it is really a very evident discrimination against the Dominion of Canada. Whether or not it will be followed by retaliatory prohibition on the export of wood is, of course, not yet certain, but there is a very strong feeling that this will come to pass at an early date. One point about our tariffs on this side is that immediately they are announced by the Finance Minister at Ottawa they come into effect, and business is not held up with uncertainty waiting the passage of a law through Parliament as it is on the other side. A very good example is the paper manufacturers who are in such an unstable state of mind over their new tariff and entertaining hope against hope that some change will be made in it before it finally passes the Senate.

To deliberately aim a stab at Canadian industry such as has been done by this tariff has had the exact effect which was predicted in our columns. Elsewhere in this issue we carry an interview of Sir Lomer Gouin, Premier of the Province of Quebec, with our correspondent in this respect. As is well known, Sir Lomer has been the chief figurehead in Canada in the placing of export prohibitions on pulp wood. In this interview he states that if the Americans hope to have these restrictions removed they have taken the most unwise course possible to secure it. For himself, he says he would deal more generously with our neighbors had they not shown a disposition to discriminate against us.

Our esteemed contemporaries have taken occasion to spend considerable time in explaining their surprise at the Canadian view of the new tariff. The Paper Trade Journal says Canada will have too much business sense to undertake such an uncalled for measure as the restriction of the export of pulp wood. Our esteemed contemporary "Paper" in an excited editorial says as follows: "So generously indeed have we dealt with our Canadian neighbors, that, like spoiled children, they become impatient when they cannot have everything in sight." Later, in replying to our criticism that they do discriminate against a good customer who buys upwards of $400,000,000 a year, they claim as follows: "Why do Canadians buy our goods? Is it for the purpose of adding to the prosperity of American interests? Are they, out of the goodness of their hearts and abundance of their brotherly kindness, making sacrifice to help us along? As a matter of fact, are they not buying our goods simply and solely because it is Canada's interest to do so? And if it is purely the result of good business methods on their part, we see no reason why America is thereby placed under obligation to shape her tariff legislation to suit the views of the Canadian."

If the worthy editor of this journal would but apply his own logic to the other side of the question and ask himself, why has the United States admitted our various products under the conditions which they have, we venture to suggest that he would arrive at a very different conclusion. We do not for a moment think that our esteemed friend expects Canada to believe that they have trampled on the conditions of their forefathers by foregoing their own interests to the advantage of ours. They have done these things because it is in the general interests of the United States, and not for one moment had they any idea of benefitting Canada. Not even, indeed, did they expect that Canada would consider she was being generously used and would reciprocate by lowering duties on this side.

In confirmation of our point in this connection, we have but to refer to Section 2 of the Reciprocity Act—which had no reciprocity in it. For with any of the reductions that were agreed upon by Mr. Fielding and the American tariff makers, he insisted on the principle that any articles which were adjusted at all should be adjusted both ways. This resulted in the American tariff in many instances being cut 10 to 15%, while ours had only to be cut on the same articles 5%.

As the years have rolled by our American neighbors have practised their cherished ideas of high protection against us without any protest, since we were not considered in those days a manufacturing nation. There has always been in almost every line of manufacture, 10% to 15% duties in their favor. But when Canada comes along with one line—the paper industry—in which she can more than compete with the American manufacturers; when she asks for fair play and for at least an equal show with other nations, we are dubbed "spoiled children."

We will certainly be dealing very graciously with our friends if the Dominion Government does not immediately put on a retaliatory prohibition on the export of all pulp wood, both freehold and Crown land.

Recently there has come to our notices from various sources rumours that in the years to come, and that at no very distant date, the exportation of coal will be prohibited from the United States; and it will be amusing for interests on this line to watch how the shoe advocated in the issue of May 21st by the editor of Paper, will fit when they try to put it on their own foot.

As the president of one of the largest American paper companies points out in a recent interview; Canada is doing exactly what the United States would do under similar circumstances, only she is not carrying it to the extreme, which he claims with absolute truth they would.

If our friends see no reason why they are placed under obligation to us on account of our being good customers of theirs, we beg to ask if it is not good busi-

ness on the American side of the line to have a satisfied customer rather than a grouchy one? Sir Thomas Shaughnessy, president of the Canadian Pacific Railway, points out in an interview with the press this week, that there is no sentiment in business. It is not a matter of sentiment for which we are contending, but we are inclined to feel that it is very poor business on the side of the Americans to discriminate against their best customer.

A PARALLEL IN SWEDEN

In this issue of the magazine we are carrying a special article by Mr. G. B. Steffanson, of Windsor Mills, on the "Sulphite Developments in Sweden." We have arranged for this special article in view of the enormous proposed sulphite production in Canada, since we face a parallel case in this country. As Mr. Steffanson points out, however, there are conditions which can easily be avoided whereby the increase of 600 tons a day, which is proposed, will not be so serious as it otherwise would.

We must remember, however, that to increase our production 175,000 tons a year within the space of about one year, we are face to face with a most serious proposition. The total average yearly increase of sulphite in the world, including the period of the enormous growth in the Scandinavian industry, was but 145,000 tons. Notwithstanding which we are proposing in Canada alone to increase our production more than the annual increase in the whole world. Our market is necessarily, for some years at least, limited to Canada and the United States. The annual growth of the United States importations averages about 25,000 tons a year.

In view of these figures, it is evident what an insane policy our country is pursuing, when we propose to add 150,000 to 175,000 tons a year to our production. Those who are interested in the proposed mills should be very particular to secure accurate information. The Canadian Pulp and Paper Association (Montreal) has prepared a number of statistical tablets, which are available upon request, in connection with this increase in sulphite production.

True, many will argue that the low cost of wood in this country should eventually meet the competition of Scandinavia. At the same time, however, these figures, in black and white, show us what an insane policy our enormous development is when figured out on an accurate basis.

EDITORIAL COMMENT

The article appearing in this issue on a paper mill running on a five-day basis should be of intense interest to most of our mills in Canada.

The facts found out there have cost a lot of money and are the results of investigations by experts.

The American Paper and Pulp Association, who footed the bills, in this connection, have done a great deal to assist manufacturers in knowing mill costs exactly.

Mr. Hastings is also extending these investigations to a news mill, with the idea of determining exactly the most efficient basis on which to run a paper mill.

We trust our readers will appreciate the results of his untiring efforts in this connection, and the Pulp and Paper Magazine graciously acknowledges his courtesy in the publication of this data in our columns.

Summary of the eleven months' trade ended February just issued by the Department of Trade and Commerce shows a remarkable increase in both our imports and exports with the United States.

Our imports have jumped close to $400,000,000 and our exports have risen from $100,000,000 to $140,000,000. This ought to show our intelligent American friends what good customers we are of theirs, buying almost three times from them what we sell them, almost all of their products being manufactured. In spite of this continued growth in their exports to Canada, they are attempting to discriminate against us in the pulp situation by their new tariff.

This may be good politics for them, but it is certainly not good business and tends to make Canadian interests sceptical of American sincerity.

Within the last few months little has been heard around industrial and financial circles but talk of the tightness of money. This has affected pulp and paper enterprises to a greater extent than probably any other enterprise in Canada except real estate. We must deprecate the fact that everyone seems to delight in standing on the street corner discussing probabilities of the money market and tight conditions. The conditions are by no means as bad as all this would indicate. Give a dog a bad name and you soon have a bad dog. Continue talking of financial conditions and forecasting a break in the markets and dire shoals ahead will soon lead to exactly the conditions predicted.

We have no doubt things need to be watched somewhat carefully, but why advertise the fact by saluting everyone one meets with the old story of tight money conditions?

Everyone in the paper industry especially should be optimistic and attempt to boost conditions rather than assist in lowering the credit and name of the country, and the chances for legitimate industries.

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THE DEVELOPMENT OF THE SULPHITE PULP INDUSTRY IN SWEDEN

By G. B. STEFFANSON

In 1873-74, C. A. Ekman built the first sulphite pulp mill in Sweden and this was the first one to produce sulphite pulp which could be used with advantage for paper making.

A few years later two more sulphite pulp mills were built in Sweden. None of those mills were in existence for more than about 15 years. They were all built on a very small scale and are to be considered as experimental mills; larger mills soon forced them to close down.

The oldest Swedish sulphite pulp mill now in existence was built in 1883, one in 1885, one in 1887, five in 1889, two in 1890, one in 1891, one in 1892, three in 1893, two in 1894, one in 1895, two in 1896, five in 1898, four in 1899, two in 1901, and two in 1903.

To this number has to be added a few small mills, constructed by paper making concerns to supply their own paper mills with sulphite pulp.

This building activity is apparently irregular, but depends in this case, as in many other cases, on the fluctuations of the price of pulp in such a manner that the building activity increases when prices keep high. It must also be pointed out that the older mills were constantly enlarging their operations. Many of the old mills were built for a production of seven to ten tons in 24 hours, with a view of possibly increasing the production to twice this amount, but about ten years later many of those mills were turning out 50 tons or more.

Although Sweden always has been the leading country in Europe in manufacture of sulphite pulp, it must also be borne in mind that Germany and particularly Norway and Finland have produced very considerable quantities.

In 1906 no less than five sulphite pulp mills were under construction in Sweden and ten mills were being built in 1907 and 1908. Of these, nearly all were built for a production of 50 tons or more. This enormous increase of the production caused considerable anxiety amongst the sulphite pulp manufacturers, and, in many cases, the new mills had sold a large portion of their production for several years to come at very low prices. Six months to a year before they had actually made any sulphite pulp at all, they were afraid they would be unable to sell their pulp in competition with the old established mills in case of overproduction.

The consumers made the best of the conditions and were not inclined to buy except on long contracts and at low prices, and simply refused to give short contracts except at ruinous prices, as it was their policy to have their immediate wants supplied by jobbers even at higher prices in order to force the producers to agree to long contracts. The majority of the mills did not venture facing the immediate loss and the possibility of having to store part of their production, but accepted many years' contracts at prices slightly higher than the cost of production, which, in many cases, later proved to be too low even to cover the cost of production.

Many mills are at the present time victims of these absurd contracts, and do not profit very much by the higher prices, whilst the more farseeing consumers and jobbers make good profits.

It must, however, not be overlooked that more than one mill was forced by financial circumstances to make long contracts in order to find a steady sale for the immediate future in order to avoid financial difficulties and the possibility of liquidation and administration or even a forced sale, which, during previous years of a financial crisis had caused enormous, if not total loss, of the capital invested.

The great increase of production and the reputed overproduction of sulphite pulp in Sweden coincided with the financial crisis which emanated from United States in 1907 and was felt mostly in Sweden during 1908.

The Swedish banks which were on the whole very solid and founded mostly on the basis of joint liability, but which were often in the hands of men without a solid financial training, had, during the booming times preceeding the crisis obtained enormous sums from abroad for short periods in order to meet the immediate demands. These loans were called in according to the increasing shortage of money on the continent. The shortage of money which followed in Sweden apparently made the banks loose their heads completely, and they refused to give either commerce or industry the necessary credit, in some cases, they even went to the extent of refusing to discount accepted three and six months' drafts, which, in Sweden, are the usual form of settlement. This was done in apparent ignorance of the fact that commercial and industrial enterprises are in need of all the help which can be given to them by the banks in time of a crisis.

At the same time many promising pulp companies were forced to suspend constructing operations and liquidate before they had started their production and thousands of previously solvent firms had to go into bankruptcy.

The banks alone were not, however, always to blame, many mills did not possess adequate working capital, and some of them actually had loans on short terms before the crisis came, which policy had been advocated by the banks. They relied on being able to obtain loans on short terms in case of need and overproduction with stored pulp as security, which method had been successful in past years.

On closer examination of the facts it becomes apparent that the overproduction of sulphite pulp was wholly imaginary, because the production in other countries had remained stationary while the consumption had increased enormously. The best proof of this is that the Svenska Cellulose Förening (the Swedish Chemical Pulp Association), which comprises the majority of the sulphite pulp mills which manufacture for export and which in conjunction with similar associations in Norway and Finland, keeps statistical records of the sulphite pulp made and sold, did not decide on decrease of production, which happened previously when a real overproduction had to be faced.

It is thus obvious that the financial crisis had the greatest influence on the pulp prices, but it can not alone be blamed for the later depression of the industry.

During the years before the crisis money seemed to be available in Sweden in unlimited amount, and the lumber companies and private individuals obtained

money for the building of large sulphite pulp mills without a guaranteed supply of pulp wood. The lumber corporations built their pulp mills much larger than was warranted by the pulp wood cutting on their own limits, which is regulated by law, relying on being able to purchase the remaining quantities of wood required. The effect of this policy became very apparent in the big lumber district in the north of Sweden, the district of Sundsvall, in the high price of pulp wood.

The position of those mills which had to rely on bought pulp wood entirely was even worse, and old and new mills suffered alike. This may be shown by an example. An old mill situated on a medium-sized river in the southwest of Sweden produced about 45 tons in 24 hours from bought wood. During 1905 this mill paid about $6.50 a cord for wood delivered at the mill. During 1906 to 1908 this price was increased with 6, 12 and 15 per cent., respectively, or 33 per cent. in all, which conclusively proves that the supply of wood in this district did not exceed the demand. Nevertheless, two new sulphite pulp mills were built on the same river in 1907, one on each side of the old mill, with a production of about 30 tons each, thus increasing the daily demand for wood from about 80 cords to about 190 cords. The results of this were not long in coming. The river and one railroad with its branches could supply the old mill with wood from their respective districts, but now all three mills had to buy their wood further afield from districts served by other rivers and railroads and had to compete with other mills in other parts of the country which also had to obtain their wood from a distance. The price of wood for the three above mills became very high, principally on account of the freight for the long distance. This is only one example of many similar cases.

There is another factor which has largely contributed to the precarious position of the sulphite pulp industry and this is the labour movement. More than ten years ago the majority of the workmen in the sulphite pulp industry joined a National Union of Industrial Workers, and this union soon became powerful and adapted such coercive methods that nearly every man in the industry was forced to join this union, has caused no end of trouble and strikes, and the big lockout in Sweden in 1908 was really organized by the Employers' Federation in order to settle the question of who was to run the mills, the employers or the workmen and their union.

The schedules of wages were usually agreed on for a period of three years, and at every adjustment of the schedules the employers were obliged to agree to an increase of pay amounting to 15 per cent. or more. This created a very difficult position for the older mills which were built on the assumption of low wages, and, consequently, had no labour-saving transportation appliances and other plant, and, in many cases, were unable to install them at a reasonable cost.

Considering that a building activity similar to that in Sweden in 1896 to 1898 in the sulphite pulp line is anticipated in Canada, the above remarks should be of some interest to the trade, but it must not be taken for granted that a similar depression in the sulphite business will follow in this country, provided, of course, that the mills are built in a sensible way, i.e., so that there is no waste of money in the erection of the mills, and, at the same time, that the mills are so constructed that the amount of raw material used in the manufacture of the same quality of pulp does not exceed the amount used in European practice.

A permanent source of supply of wood is most essential.

The Canadian mills, as a rule, are financed on a sounder basis than many mills in Sweden on account of the better credit system in this country.

The price of wood in Canada is appreciably lower, amounting to about two-thirds of the present price in northern Europe and half the price of the wood in Germany.

The price of wood in Canada is also much steadier fluctuating, mainly with the wages, whilst the European prices are constantly on the increase. In this connection it may be pointed out that several German mills in the sulphite pulp line have not paid a dividend for the last year, although the business has shown a profit, because they anticipate large rises of the wood prices this year, as well as the next, and following years.

The higher wages in this country are of minor importance, at least to the larger mills, and it must be remembered that the frequent strikes and lockouts in Europe cause expensive shut downs.

The sea freight from Europe for dry baled sulphite pulp amounts to $4 a ton or more.

Considering everything, the Canadian mills should be able to produce their sulphite pulp at a lower cost than the European mills at the present time, and in the future, especially, and thus always have an advantage on the United States market in spite of the proposed duty of $2 a ton on Canadian sulphite pulp; this, as long as the Canadian export of sulphite pulp does not run as high as the United States import.

Until this limit is reached no ruinous prices are to be feared on this continent.

The consumption of sulphite pulp is very likely to increase considerably as in former years, whilst it is improbable that the European production will increase as pulp wood is becoming scarce and the virgin forests, as in the interior of Russia for export are too distant to enable them to be profitably worked even with the present prices of sulphite pulp.

In this connection it may be pointed out that the time should not be very far away when the European paper makers will have to import part of their sulphite pulp from Canada, and it is, therefore, good policy to build sulphite pulp mills which can turn out a pulp of the same quality as the European mills and locate them at tide water.

PEACE RIVER DISTRICT.

(Special to the Pulp and Paper Magazine.)

Like wheat culture, the manufacture of pulp is likely to be an industry pushing its way farther and farther north. People who have been through the Peace River country speak of large bodies of wooded country in close proximity to water powers of extraordinary magnitude. One prominent instance is that of the Peace River Rapids. There is said to be a fall in a distance in eighteen miles of no less than 225 feet, and some authorities—experts, we believe, connected with the Conservation Commission—claim that if all this power could be harvested up, there would be a possible production of 400,000 horse power. In the Fort Smith Rapids the fall is about 135 feet, the volume of water representing the total flow of the Peace and Athabaska Rivers, and the potential development of horse power consequently reads like a fairy tale. Whether the reports of the wealth of this region in wood adapted for pulp making have been confirmed by competent manufacturing judges we do not know, but there is no doubt a wide field for investigation is open.

SUCTION ROLLS AND THEIR PUMPS

By ROBT. MARX

The problem of constructing a good suction roll is one which is almost as old as the Fourdrinier machine, itself. A good deal of sense and otherwise has from time to time been published in technical papers on this subject, just as on many other subjects affecting the conditions of manufacture, or of interest to the trade in general. There have been articles written by users of suction rolls, and others by manufacturers, both of whom might be expected to have a reasonable knowledge from experience, and there have also appeared the inevitable contributions of those unprejudiced in their utterances by either knowledge or experience. All this, of course, is just as it should be, and is in accordance with the time honored and customary treatment accorded to almost every new departure in manufacture.

We use the term "new departure" possibly in a wrong sense, because the fundamental idea embodied in the suction roll is, as we have said, nearly as old as the Fourdrinier machine, itself. But, it is perhaps only recently that the suction roll has become a commercial proposition. The patent literature regarding suction rolls extends back, continuously, over 50 years, and the fact that only recently has a really practical suction roll been placed on the market, serves to give an idea of the difficulties to be contended with in devising a suitable apparatus.

All kinds of claims have been made as regards suction rolls and their operation, and only recently has an article appeared with one of the most humorous set of claims that has ever been made regarding any suction roll. Such claims are, of course, incapable of affecting practical judgment regarding the merits, or faults, of suction rolls, but it is to be regretted that matter of this description should be published in space which one might expect to be devoted to a more useful object.

The purpose of the suction roll is to extract the water from the sheet, and it is only of advantage to the papermaker to install a suction roll in the place of his couch press, if it will enable him to produce as good, or a better sheet, at a lower cost. A good suction roll, besides doing these things, must be absolutely reliable in its working, requiring little or no attention, and show a minimum of wear. Apart from the suction roll problem there is the question of a suitable pump. Hitherto rotary pumps have largely been employed, as being the most convenient and cheapest means of producing the necessary vacuum. It has been claimed that this type of pump is the only one which will produce a uniform suction, but a casual examination will show that such a claim is entirely unfounded. As a matter of fact, the ordinary blower type of pump is about equal in uniformity of action to a single cylinder, double-acting reciprocating pump, while a triplex pump shows a very considerably more uniform suction than the rotary pump. The only objection to using a reciprocating type of pump lies in its cost, but this type of pump is, undoubtedly, a more efficient one, and it is an open question whether, especially if power is expensive, in the long run it is not more economical to employ a reciprocating type of pump. Fan pumps, which are very similar to the rotary pumps now in general use, were employed for creating a uniform rarifaction under the wire in the 'thirties of last century, and in paper making literature a definite instance of its use in 1839, can be seen.

Receivers have on various occasions been tried between a suction roll and the pump, with a view to rendering the suction action more uniform, but as a general rule, these have not proved to be very effective. The reason for this becomes apparent when it is realized, that the total volume enclosed by the suction pipe line will, in most cases, considerably exceed the volume of the receiver, unless the latter is a very large one. As a matter of fact it is sometimes an advantage to make the pipe line between the pump and the roll a fairly long one, with the object of making it act as a receiver, or pressure equalizer, and it is of advantage to do this so long as the friction losses do not become unduly increased.

The fact that a rotary pump will work with a suction roll, although with very poor efficiency, has to some extent proved to be a hindrance in the development of improvements. A rotary pump, being cheap and workable, has been generally adopted without further question, although it is difficult to expect of any one pump, that it shall handle a mixture of water and air under the conditions obtaining in this class of work.

The ideal method would appear to lie in separating the water from the air, and handling each with a pump specially adapted for its particular purpose, and the one obstacle to this, is the general objection to the additional cost and the slightly additional complication. Two drawbacks which are, however, more than likely to be counterbalanced by a saving of power, and the more effective operation of the suction roll.

The advantages of abstracting the moisture from the sheet by means of a vacuum have been recognized for a very long time, in fact, as we have said, practically since the inception of the Fourdrinier machine, but it is only recently that the question has been raised, as to how this moisture is actually extracted. It has been stated that the water is withdrawn from the sheet by the air rushing through, in between the fibres. On the other hand, it has been asserted that it is the pressure of the air over the suction opening which effects the withdrawal of the moisture from the sheet. For the former theory, the fact that a suction roll works with very open sheets, such as blotting papers, filter papers, etc., and for the latter theory, the equally cogent argument of the results obtained on greaseproof and imitation parchment sheets, apply. The question is, at best, one of academic interest only, and the true answer in all probability lies between the two extreme claims.

From the papermakers' point of view, the point of interest lies in the fact that the moisture can, in effect, be extracted from the sheet by applying a vacuum to one side of it.

Of the large number of failures of suction rolls during the last few years, no doubt some proportion can be attributed to the use of suction rolls on unsuitable papers, and there cannot be the least doubt that the suction roll is not equally well adapted for all classes of sheets, under all conditions. It is by no means the panacea for all papermaking ills which it has been claimed to be. It can, however, with justice and reason be asserted, that the bulk of these failures was not due

to inappropriate conditions of working, but to faulty and unsuitable design.

The difficulties in designing a good suction roll are many and varied, as is evidenced by the numerous attempts which have been made to produce an efficient apparatus. In the first place, a suction roll has to run twenty-four hours a day, six days a week, and to last practically as long as the machine itself, the overhauling and repairs necessary should not be more than those required for, say, the rest of the machine. It should be capable of running for a year without being cleaned out internally, the wear and tear must necessarily be very small, and therefore the internal friction minimized, so that it takes much less power to drive it than the Couch press, and no adjustments—with the exception of the adjustment for change of deckle width—should be necessary. In addition, it must be arranged so as to admit of the convenient change of the wires, and finally, and most important, a good suction roll must get the sheet at least as dry as the couch press, make a better quality sheet, and not withdraw an undue amount of filling or coloring matter.

A design of roll which meets all these requirements is obviously not a very simple matter, especially taking into consideration the fact that on a large roll, quite apart from the weight of the roll, itself, there is often a pressure of many tons on the roll, due simply to the action of the vacuum. This pressure is exerted between the suction box and the revolving shell, and naturally tends to press the box against the shell. In some constructions of suction rolls, springs are used, which actually still increase this pressure of the box against the rotating shell, and in order to prevent the friction between the box and the shell becoming too great, stops are employed. Now, in this type of suction roll, the packing between the box and the rotating shell is effected by the actual contact between the two. Consequently, in order to ensure that sufficient contact takes place to effect the necessary sealing against air leakage, and, at the same time, to provide that the pressure between the box and the rotating shell is not so great as to cause undue friction, it will be seen that very precise and exact adjustment of the stops is essential. If the box is allowed to press too hard against the shell, then an enormous friction will be set up; if, on the other hand, the box does not press sufficiently hard against the shell, there will be a large air leakage, which will seriously detract from, if not entirely destroy, the usefulness of the roll in abstracting the moist ure. Furthermore, these large air leakages call for a larger pump to handle the excessive air, which is not doing any useful work, and the direct consequences is a considerable increase of the power required for the pump. This has directly been proved by the remarkably low power consumption for the pump, which has been obtained in installations where the suction roll is constructed in such a way that the inner box is absolutely fixed, and the outer shell rotates about it upon specially constructed bearings. The actual packing, or sealing, between the two members is effected by packing bars, designed in such a way that they pack and have no other subsidiary function, such as maintaining the distance between box and suction roll.

It is natural that this construction must give more satisfactory results than one in which the operation of the roll is dependent partly on the action of springs, and largely on the exact adjustment of stops; in effect really an unmechanical combination of unsatisfactory components.

It is hoped that this article will form a not entirely valueless contribution to the general knowledge of suction rolls, and in doing so will have attained its purpose.

THAT FAVORED NATIONS DECISION.

(Special to the Pulp and Paper Magazine.)

Glens Falls, N.Y., May 26, 1913.

Concerning the ruling of the United States Customs Court, whereby it was decided that European nations are entitled under the favored nations clause of their treaties with this country to the free entry of news print paper and pulp wood into this country, owing to the fact that Canada is allowed that privilege under Section 2 of the Reciprocity pact, a local paper manufacturer yesterday made the following statement:

"It is a ruling which I anticipated. It was provided in the reciprocity bill that if Canada rejected the measure that clause relating to the import of pulp and paper would become operative just the same. When paper began to come into this country free of duty importers in foreign countries, particularly Scandinavia and Germany, claimed that they also had a right to bring pulp and paper in free. They made their protest to ex-President Taft, who referred the matter to the Customs Court.

"If the paper industry in this country is injured the Republicans will be to blame and not the Democrats, as the whole muddle was started by President Taft when he proposed reciprocity with Canada.

"The decision of the Customs Court also means that the importers will get a rebate on the duties paid during the last year, and this will amount to several million dollars.

"Eighty-five per cent. of the paper coming into this country from Canada has been coming in free of duty for the past eighteen months. If the Underwood Tariff Bill is enacted it will affect only fifteen per cent. of the pulp and paper coming into this country, as the balance is already undutiable."

It is estimated that the total amount of revenue which the Government will have to refund to the importers amounts to about $100,000 per month, or, in other words, since July 26, 1911 (20 months), $2,000,000.—Meb.

CHEMISTRY AND PAPER PULP

The University of Maine will this fall install a course of instruction in the chemistry of paper and pulp making. There will be at least two courses along this line in the fall semester and one or two in the spring semester, those in the fall comprising one on paper making and one on pulp making, while in spring there will be special work on pulp making. This will be the first course of its kind offered by New England technical schools and one of the first, if not the first, established in the country.

This department will be housed in the new chemistry and physics building of the university, the construction of which will be begun this summer and which will cost $75,000.

There is a field for this course of study, and there is employment for those who successfully complete the course. There has been some talk of establishing some such course at Lowell, but up to date it has not assumed practical form. The University of Maine has evidently been enough alive to conditions to seize the opportunity presented. We wish it the largest measure of success in its new departure.

EFFICIENCY STUDY OF A MILL'S WORK

A Report of the American Paper and Pulp Association on a wrapping mill, by Associated Efficiency Engineers of New York.

The object of our service was to investigate the expediency of operating mills on a five-day basis as compared with a six-day operating basis. To be more explicit, it has been common practice among the members of your organization to operate mills continuously for a period of six days and then close down on the seventh day; in other words, on Sunday, to clean up and make necessary replacements, adjustments and repairs for the following six-day run. This Sunday work is performed by that portion of the operating force whose "shift" is scheduled for that date in accordance with the standard weekly schedule.

The———Mill, on the other hand, has adopted a schedule for operating only five days a week, with a shut down on Saturday for cleaning up and mill repairs, which schedule will be termed in this report the "Five-Day Basis."

In investigating the influence of this change in operating schedules on the business it was evidently a matter of first importance to determine to what extent the cost of production was affected.

Material Costs.—It is evident that the cost of raw material entering into products varies in direct proportion to the tons produced. The cost of raw material per ton of product may therefore be eliminated from our calculations, as not being affected by any change of operating schedules.

Conversion Costs.—Under the head of "conversion costs" we include the total cost of converting raw material into finished product up to the point that such product is stored and delivered to the sales department as merchandise to be sold. It is in this section of mill costs that we looked for a change in the cost of product due to the adoption of the five-day basis, as it would appear at first glance that a mill expense of only slightly reduced amount would have to be borne by a greatly reduced volume of production, therefore the conversion cost per ton would be largely increased.

The anticipated increase in conversion cost per ton did not, however, materialize, upon our investigation of their costing and production data, as will be shown hereafter.

Before taking up our diagrams in detail it should be explained that the mill under investigation had operated for about one year on the five-day basis. In consequence of the shut-down caused by recent floods in that section, we were obliged to limit the period covered by our statistics to the first eleven months during which the five-day schedule was in operation; and we have taken as a basis for comparison the same months of the preceding year during which the six-day schedule was in force.

During the period covered by both schedules the physical conditions and equipment of the mill remained unchanged, so that the periods selected may be made the basis of a true comparison.

Increase of Production During Five-Day Basis.

The mill records were reviewed to ascertain what variations in production were shown during the periods mentioned. To determine this point the average tons produced per day were plotted as shown by Diagram No. 1, plot No. A1, which shows the variations in the average number of tons per day during the periods mentioned.

The diagram shows that immediately after the adoption of the five-day basis there was an increase in daily tonnage; moreover, the line shows a general tendency toward a still greater increase in tonnage as time progresses.

By averaging the figures plotted we find that the average daily tonnage for the five-day basis was about 13.1 per cent. more than that formerly produced during the six-day basis.

Our next step was to determine whether this increase in production represented an actual increase in efficiency rather than an apparent increase; for, had the nature of the product changed from, we shall say, an average regular count of seventy to an average count of fifty, it would result in an increase in tonnage that would not be the result of increased plant efficiency.

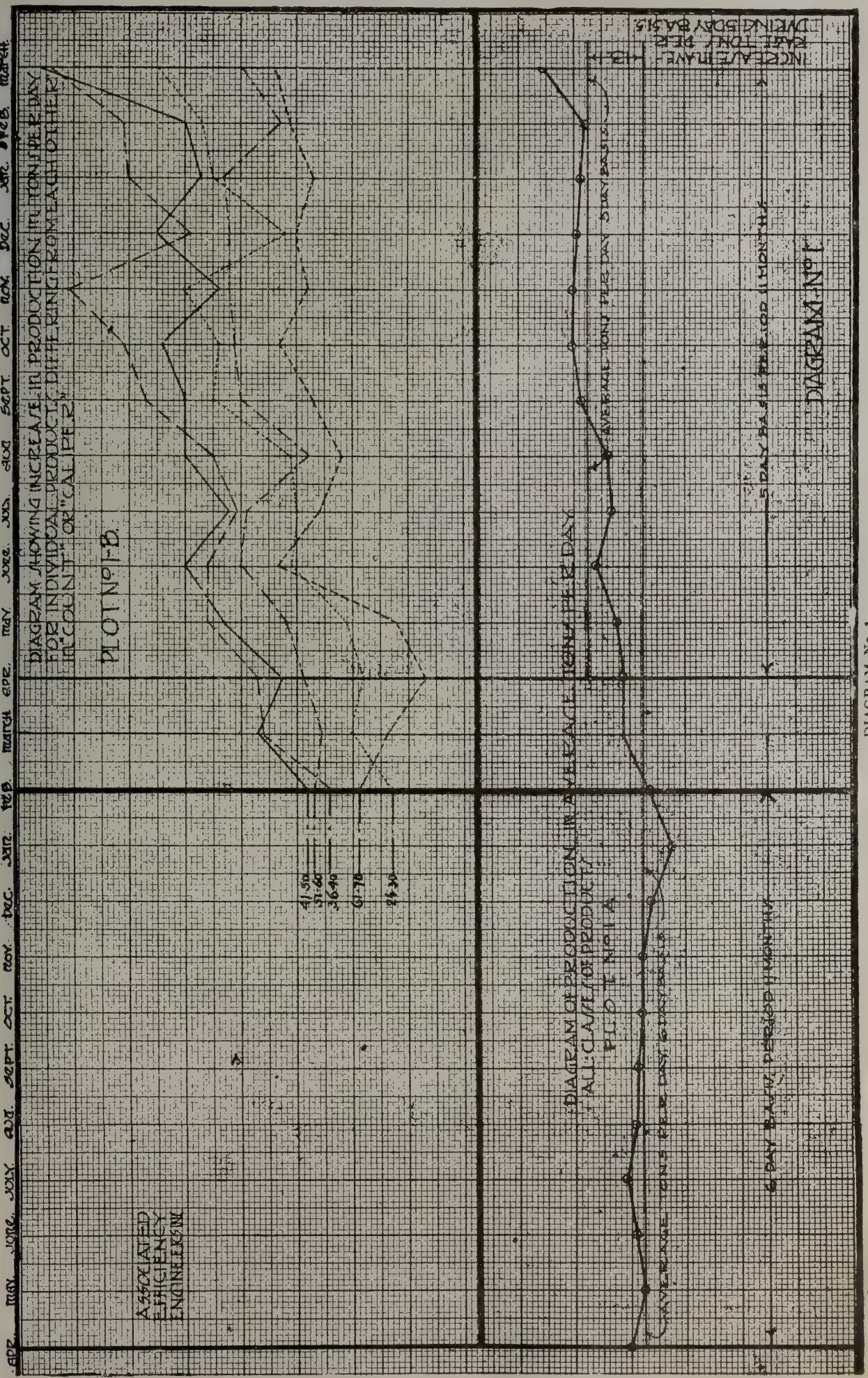
To determine whether this fact were true a separate plot was made for each of several classes of products, which varied from each other by count or caliper, as shown by Plot B1. This plot demonstrates the fact that there was a general increase in daily production on diversified classes of products which followed in general tendency the increase in tonnage of combined classes of products shown in Plot No. A1. From these facts it was evident that there was an actual increase in tonnage per day independent of any change in average count or caliper of board produced during the latter period.

This increase in daily output, after the change was made from the six-day basis to the five-day basis, was evidently the result of the following agencies:

1. The speed of the board machines was increased as far as drying capacity would permit on all grades of paper.
2. Extra labor was employed where it was apparent that the extra speed resulted in undue human effort.
3. The plant was maintained in better physical condition, as repairs were reduced in gross and the effectiveness of Saturday repair work was found to be greater than that formerly performed on Sundays.
4. A better spirit of harmonious co-operation was felt among employees.
5. A higher efficiency was obtained from employees resulting from decreased effort on their part per week.

It may be well to state that from all facts and figures which we were able to gather, the mill under discussion was evidently operating under high efficiency before the five-day basis went into effect. The increase in rate of production was therefore less than would be expected had a lower efficiency prevailed when the five-day basis went into effect.

Production in Tons Per Month.—Referring to Diagram No. 2, plot No. A2, it will be found that the production for each of the two periods of eleven months which have been selected to compare the five-day basis with the six-day basis. An average tonnage per month has also been calculated and indicated by the horizontal lines on the diagram. A comparison shows that the average tonnage per month under the five-day basis was only 2.3 per cent. below that attained on the six-day basis. In other words the increased daily tonnage


DIAGRAM No. 1
DIAGRAM OF PRODUCTION IN AVERAGE TONS PER DAY
FALL CLAM OF PRODUCT
PLOT No 1 A
DIAGRAM No 1
PLOT No 1-B
DIAGRAM SHOWING INCREASE IN PRODUCTION IN TONS PER DAY FOR INDIVIDUAL PRODUCTS DIFFERING FROM EACH OTHER IN "COUNT" OR "CALIPER"
ASSOCIATED EFFICIENCY ENGINEERS INC

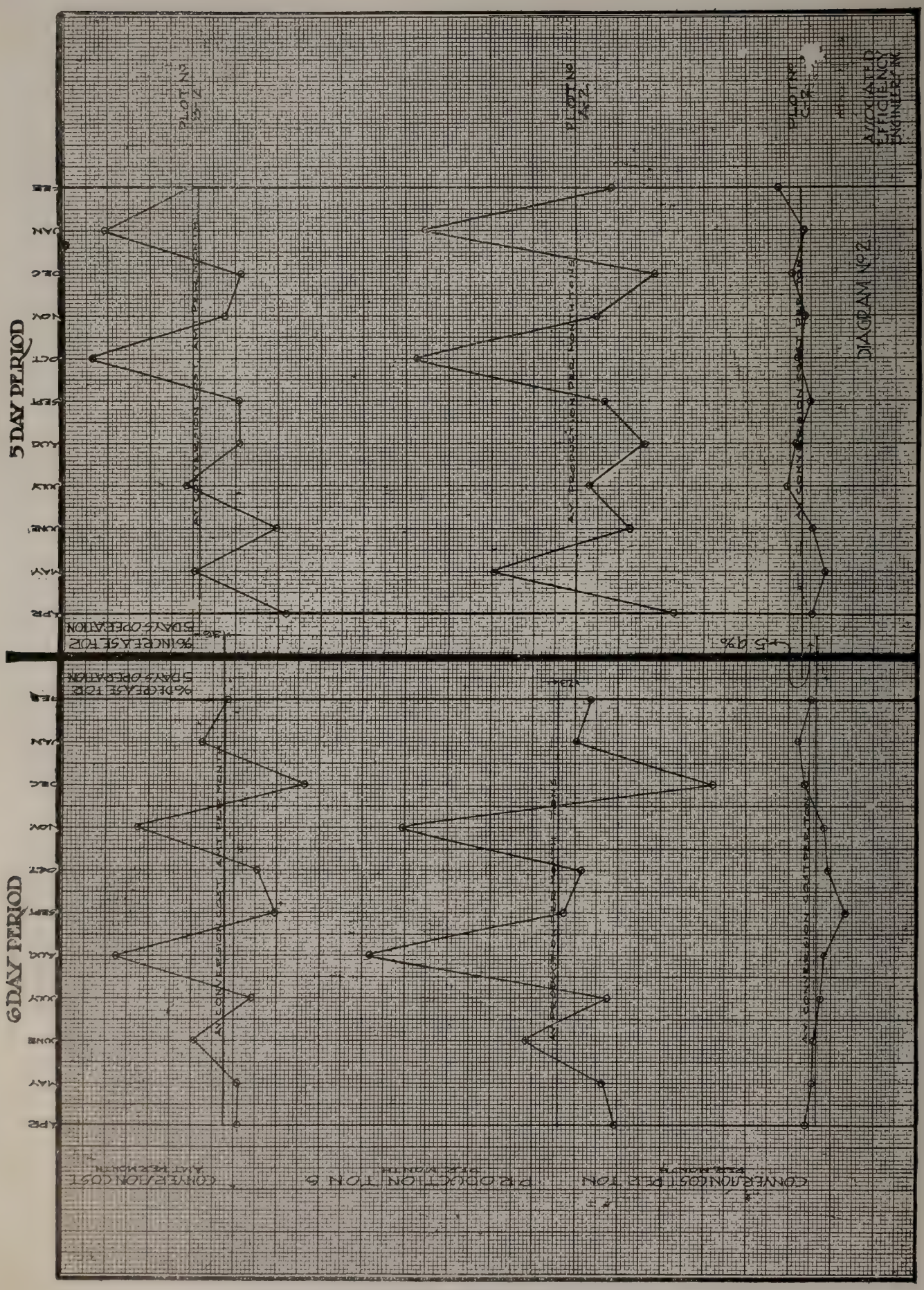

5 DAY PERIOD
6 DAY PERIOD
DIAGRAM No. 2
ASSOCIATED EFFICIENCY ENGINEERING
PLOT No 1
PLOT No 2
PLOT No 3
% INCREASE FOR 5 DAYS OPERATION
% INCREASE FOR 6 DAYS OPERATION
CONVERSION COST PER TON
PRODUCTION TONS
CONVERSION COST PER MONTH
PRODUCTION TONS PER MONTH
JAN
FEB
MAR
APR
MAY
JUNE
JULY
AUG
SEPT
OCT
NOV
DEC

DIAGRAM No. 2

previously mentioned almost compensated for the loss of one day in each week of operating time.

Conversion Cost Per Month.—Plot No. B2 shows the fluctuations of the conversion cost in dollars per month, also the average conversion cost for each of the two comparative periods.

A comparison of these diagrams shows the average conversion cost in dollars during the five-day basis to have been 3.6 per cent. higher than under the six-day basis. This figure is, however, subject to modification as will be shown hereafter.

Conversion Cost Per Ton.—The conversion cost per ton is obtained by dividing the conversion cost in dollars, as shown by Diagram B2, by the total tons produced each month, as shown by Diagram A2. The fluctuations of this cost per month are shown by Diagram C2.

It will be found that the average conversion cost per ton shows an increase of 5.9 per cent. during the five-day basis over that shown for the six-day basis. This figure is also subject to modifications as will be shown hereafter.

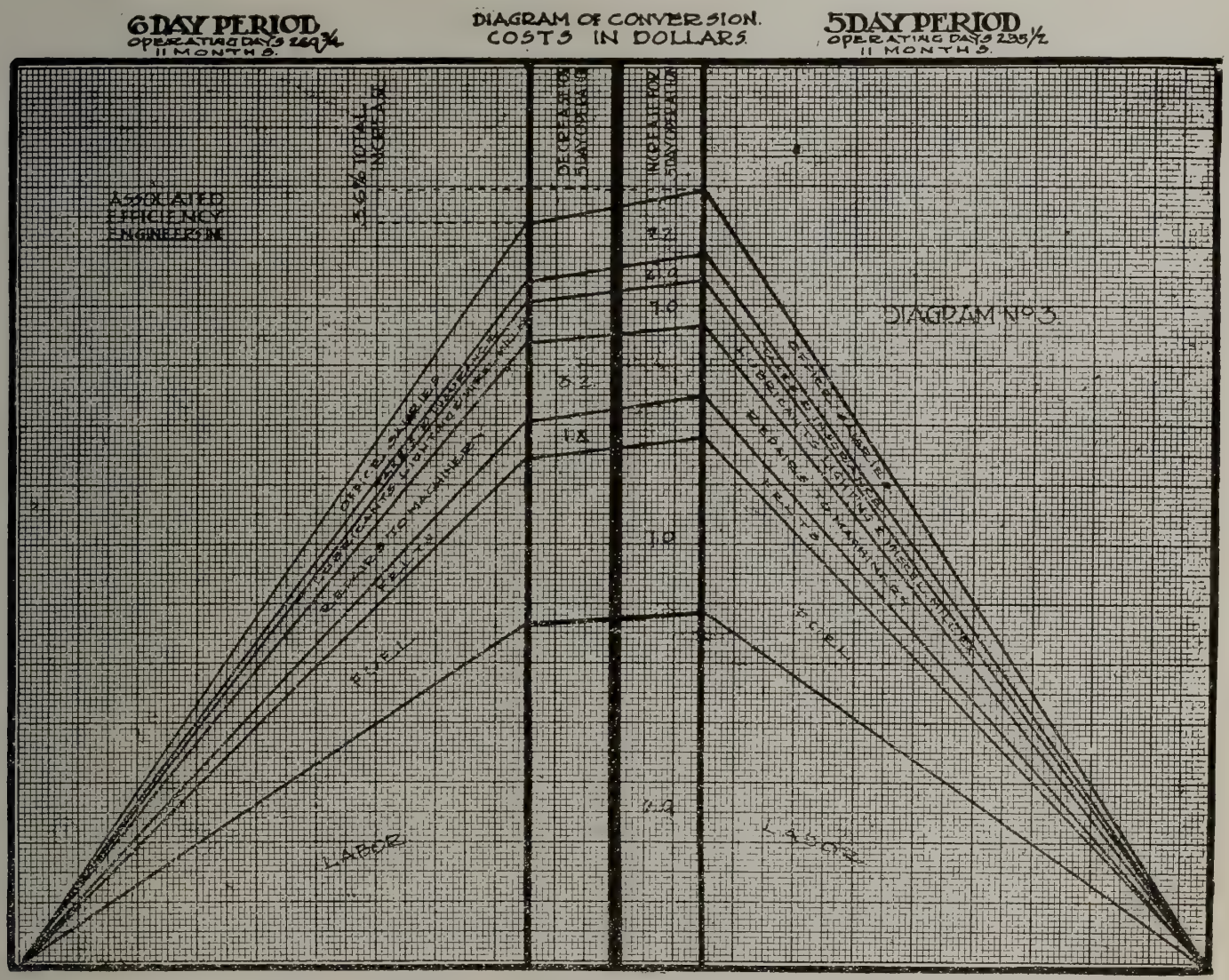


DIAGRAM NO. 3

[2]

Analysis of Conversion Costs in Dollars.

As it seemed unreasonable to suppose that the total conversion cost in dollars was more during the five-day basis than during the six-day basis period, we made the analysis of these costs as shown by Diagram No. 3. This diagram shows triangular areas which are proportionated to different items of the conversion cost, within an area proportional to different items of the conversion costs in dollars. The diagram shows an increase in the items of Labor, Fuel, Miscellaneous Mill Expenses, Taxes, Insurance and Office Salaries. An analysis of these items showed, however, that the increase in each instance, except that of labor, was the result of altered commercial conditions, higher prices, or some agency that was entirely independent of the change from the five to the six-day basis. Even in the case of labor there were rises in the labor scale of wages which were independent of any change in operating methods.

An adjustment of the figures was therefore made so as to reduce the figures for the five-day basis to the same basis of prices, wage scales, etc., as those obtaining under the six-day basis, and the diagram was replotted as shown by Diagram No. 4. Diagram No. 4 is, therefore, the correct basis for figuring conversion cost per ton, and Diagram No. 3 is introduced merely as representing the actual book figures and also as being of interest in revealing the "higher cost of manufacturing" during the later period.

Modified Conversion Cost Per Ton.—On the basis of Diagrams Nos. 4 and 2 we therefore submit the following revised data:

	Per Cent.
Decrease in average tons per month under five-day basis	2.3
Decrease in total conversion cost under five-day basis	1.8
Increase in conversion cost per ton under five-day basis	.3

is to be expected that, had another month or two been added to our figures, the result would have shown a saving in favor of the five-day basis.

Granting, however, that in the case of the average mill the cost of production would be slightly increased (although this supposition is not in accordance with this report on results shown by the ——— Company), there still seems to be so much in favor of the five-day basis as to warrant its adoption. Among the chief advantages demonstrated by the five-day basis are the following:

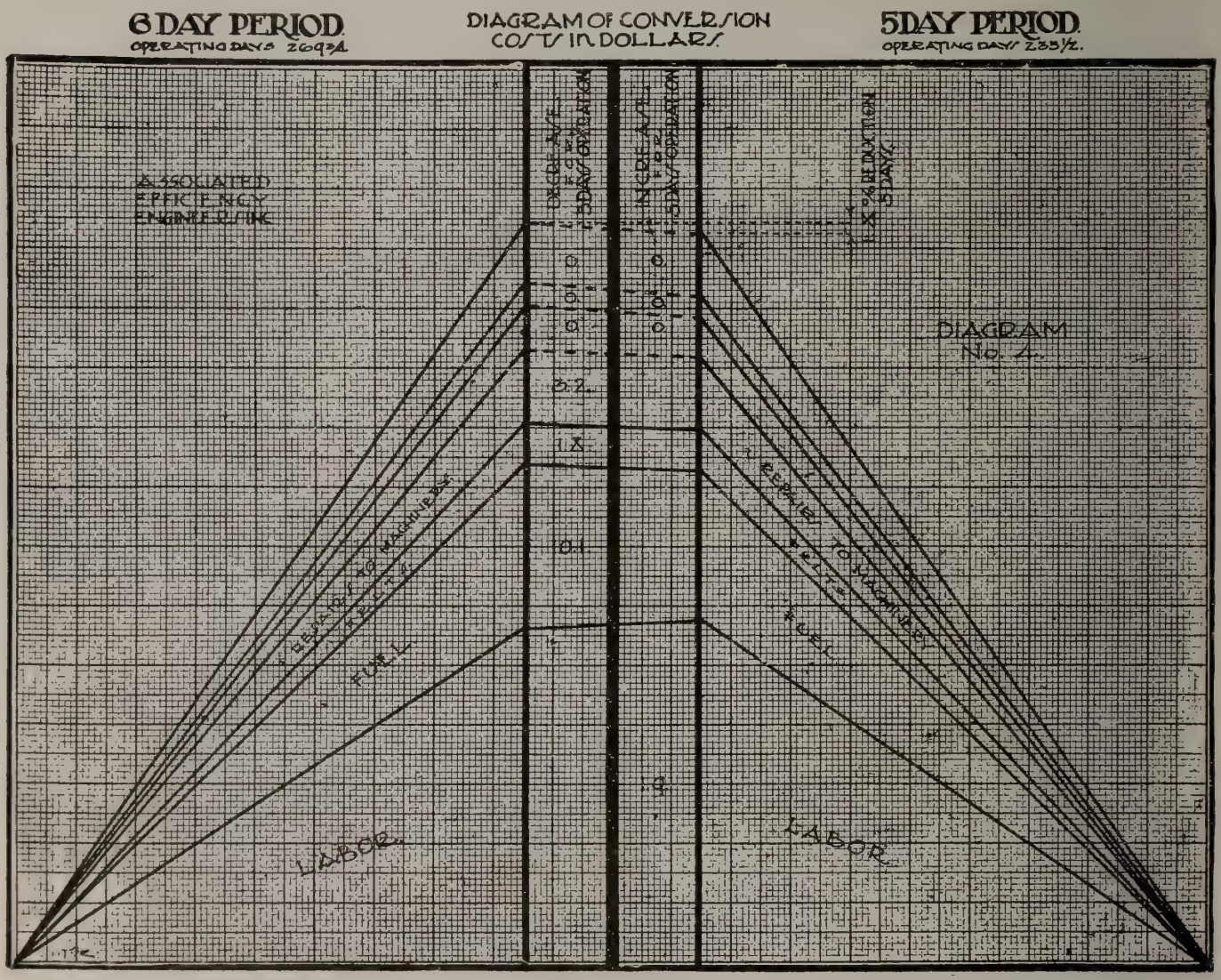


DIAGRAM No. 4

[4]

Conclusions.

From the foregoing figures it appears that the change from a six-day basis to a five-day basis has increased the conversion cost by the negligible amount of three-tenths of one per cent. When the total mill cost is figured by adding material cost to conversion cost, the figured increase in total cost will be still less than that shown. Moreover, the tendency of the production diagram shows a gradual increase in tonnage, so that it

1. Less depreciation on plant.
2. Increased efficiency from men and equipment.
3. Attracts a better class of employees.
4. Promotes a more contented spirit among employees and tends toward a smoother running organization.

We trust that the foregoing report covers all the points necessary to form a conclusion upon the pros and cons of a five-day operating schedule as against a six-day operating schedule.

PULP AND PAPER UNDER THE MICROSCOPE

By SINDALL AND BACON

(Special Series of Contributions to Pulp and Paper Magazine)

CHAPTER IV

The measurement of the dimensions of a papermaking fibre affords an interesting exercise in the use of the microscope which every student should master. We therefore, give a detailed account of the method to be employed.

Into the eyepiece of the microscope is fitted an eyepiece micrometer. This is a small circular piece of glass which can be dropped into the eyepiece of the instrument. On the surface is etched an arbitrary scale of divisions ranging from 0 to 10. This is visible in the field of view, and the numbers of the divisions can easily be seen.

The values of the divisions for any particular combination of eyepiece and objective, in other words, for any definite degree of magnification, must then be determined.

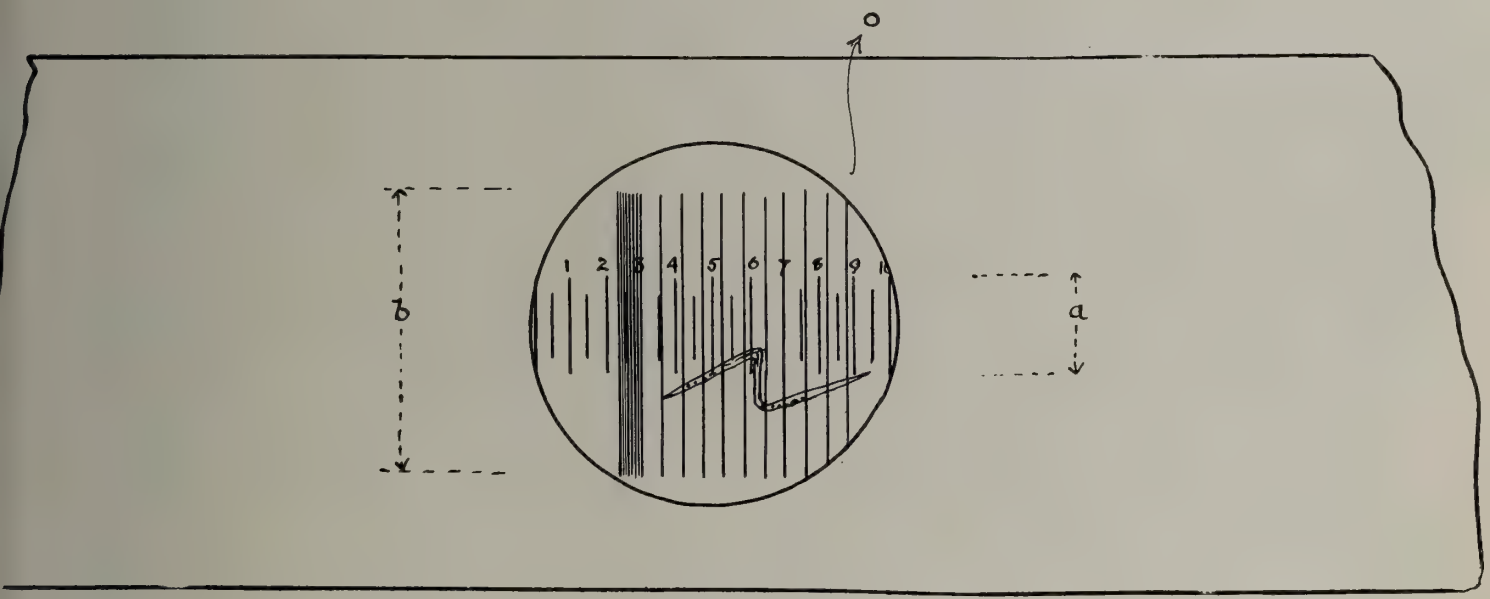


Fig. 2.

For this purpose a stage millimetre scale is necessary. The scale is a glass slip on which is etched a line exactly 1 1-10 millimetres long, divided into tenths by parallel lines drawn at right angles, the extra one-tenth being subdivided again into tenths.

Method of Valuation.

A table of magnification values should be prepared by the student for the several eyepieces and objectives in hand. We may suppose that one eyepiece and two objectives half inch and quarter inch are available. These appliances with the sliding tube of the microscope give a range of magnification as follows:

1. Short body tube with half inch objective.
2. Extended body tube with half inch objective.
3. Short body tube with quarter inch objective.
4. Extended body tube with quarter inch objective.

The eyepiece scale and the stage millimetre scale are both fitted into position, and observations made with each of the above combinations.

The lines of the stage millimetre scale are carefully focussed, and the zero mark adjusted by suitable movement of the glass slip, using the mechanical stage, to coincide with the zero mark of the eyepiece scale.

The ten divisions of the eyepiece scale will then be found in terms of the millimetre scale. For the lower power combinations, viz., short body tube, and the half-inch objective, a larger number of the millimetre divisions will be visible in the field than with higher power combinations such as extended tube and the quarter-inch objective.

The readings will vary according to the kind of microscope, and the nature of the eyepiece scale, but when the exact value of the arbitrary divisions on the eyepiece scale employed by the observer for any given combinations have been recorded in the manner shown, the measurement of fibres is easily accomplished.

Example of Valuation.

Divisions on the eyepiece scale ...	10.0
Divisions on the millimetre scale .	0.69
Hence one E.P.S. division equals	0.069m.m.

This particular value will only hold for subsequent measurement when the same objective, eyepiece and body length are used.

Thus in the microscope used by us the following values have been tabulated:

Eyepiece.	Objective.	Value of One Eyepiece Division. For 6-inch tube length.	For 10-inch tube length.
B	½-inch	.110 mm.	.069 mm
	¼-inch	.038 mm.	.024 mm
C	½-inch	.100 mm.	.064 mm
	¼-inch	.034 mm.	.022 mm

Measurement of Fibre Length.

The millimetre scale is removed from the stage and a glass slip with suitably mounted stained fibres inserted.

It may be noted in passing that when fibres are being examined for dimension, only a few should be mounted, being teased out so as to permit of accurate observation.

The fibres will seldom be found lying in a straight position, but this fact does not offer any special difficulty.

A fibre being selected for measurement is carefully focussed; then the eyepiece is rotated and the mechanical stage adjusted until the zero mark of the scale coincides with one end of the fibre.

The eyepiece is then rotated so as to bring the scale parallel with part of the fibre. The number of divisions covering that part of the fibre is noted. The mechanical stage is then readjusted in order to bring the bend of the fibre just measured to the zero mark



Fig. 1.—An eyepiece micrometer scale.

of the scale. The eyepiece is rotated so as to bring the scale again parallel with the second portion of the fibre, the length of which is then read off.

In this way the various sections of the fibre are measured in terms of the divisions in the eyepiece scale. These are added together and the sum total converted into actual millimetre readings by means of the schedule of values.

Figure 2 represents the appearance of the field of the microscope when the eyepiece is in position with the millimetre scale adjusted in focus on the stage. The smaller lines marked "a" represent the eyepiece scale, while the longer divisions marked "b" represent the divisions of the millimetre scale.

In order that the value of the eyepiece scale in terms of millimetres should be properly read off, the mechanical stage should be moved until the zero line of the millimetre scale corresponds exactly with one of the divisions; for example, No. 9, of the eyepiece scale. It will then be found that 5.9 divisions of the eyepiece scale would be equal to 1 millimetre.

In the same field is shown a fibre. In order to measure this fibre three adjustments of the mechanical stage and three readings will be necessary to obtain the full length of the fibre.

Hon. W. H. Hearst, Minister of Lands, Forests and Mines, for Ontario, has returned from a tour of inspection of Algonquin Park, where he went for the purpose of personally supervising the work of preventing and eliminating fire possibilities. This supervision is the outcome of the policy of the Department in preserving the Crown lands from the carelessness of summer tourists and seeing that the debris and "slash" are properly cleared away.

A DUTY OF $2.00 ON NEWS SUGGESTED

(Special to the Pulp and Paper Magazine.)

Washington, D.C., May 27, 1913.

Senator Charles F. Johnson, of Maine, Chairman of the Senate Sub-Finance Committee, which has the paper schedule of the proposed Underwood Tariff Bill, under consideration, is very much in favor of a duty of $2 per ton on newsprint paper. In discussing the situation here the other day, Senator Johnson stated that upwards of 15,000 men were engaged in the paper industry in his State and that he does not wish to see the industry transferred to Canada, which, in his opinion would be the case if the bill was passed with newsprint on the free list.

"So far we have given our attention only to briefs and communications filed covering the respective schedules to which we have been assigned," he said, "but no one can tell now just what the bill will contain when it comes from the Senate. We have received many protests in behalf of the paper industry, both from the manufacturers and their employees. Maine has all the facilities for paper making, equal to any section in the world, and the manufacture of paper has become one of our greatest single industries.

"If we could arrange some basis with Canada by which we could obtain access to Canadian forests and their output of pulp wood and pulp, we would be only too willing to deal generously with the Dominion. Canada, however, prefers to develop the manufacture of paper in her own country, while we would be shortsighted if we did not have the same desire if the matter was reversed.

"I do not care to make any predictions or even guess as to what will be the result in the paper industry with free trade—especially from Canada. It is said our print paper mills could turn to making other grades of paper, and would probably eventually be driven entirely out of the field. The International and Great Northern paper companies, as well as many others, have been planning to increase their operations in the State of Maine, but if print paper goes on the free list, I can readily understand that they will expand in Canada instead. The situation has been brought about by the persistent attitude of the big newspapers, and I do not hesitate to think that they will before long have reason for regret of this attitude, for in forcing the great American industry to Canada they may learn too late that they are in the hands of foreigners for their supplies. Having the publishers once in their power, it is not too much to expect that the Canadian paper manufacturers will dictate paper prices to them. That the Canadian supply would increase, even under the present tariff duty on Crown lands paper, is assured, and if print paper goes on the free list that country will undoubtedly in time furnish the supply for the trade in the United States. Since the demand for wood pulp has become so great, timber lands in the State of Maine have increased ten times in value. The Penobscot River has given means for transportation for a very large quantity of pulp logs.

"What we need chiefly, however, on this side of the Canadian border is both wood and wood pulp from that country—not the manufactured paper. I sincerely believe that a duty of $2 a ton on print paper would create a healthy state of competition between the mills in this country and the mills in Canada. This is all we ask, and it seems unfair that print paper should be discriminated against in the paper schedule and placed on the free list while other grades of paper are retained on the dutiable list."—Meb.

PULP MANUFACTURING OPPORTUNITIES ON LAKE OF THE WOODS

By F. PAGE WILSON

A few years ago a pulp concession was offered by the Ontario Government in Lake of the Woods District. But, while this included some 900 square miles of what we believe is valuable timber land, the offer, for some reason, was not taken up. There is, however, no doubt of the advantages presented in many respects by the Kenora district for the establishment of a pulp and paper mill, and we do not apologize, therefore, for bringing them to the attention of readers of the Pulp and Paper Magazine. Chief among these advantages are the ample water power capabilities, estimated at a minimum of 60,000 horse power, and a practically inexhaustible supply of pulpwood in the watershed of the Winnipeg River. This is said to be sufficient to provide a perpetual supply for a mill of 300 tons daily capacity, though this is a point on which their possibilities are frequently exaggerated.

While lumbering has been carried on in this district for many years, the sizes of timber now remaining are inferior, and this will militate against saw milling in the future.

Wood available for the manufacture of pulp covers an area of about 4,000 square miles, of which the larger part is still vested in the Crown. It is a district of low, rounded hills, interrupted by wide sandy areas and muskegs and by numerous lakes and ponds. It is well watered, with considerable natural protection against serious damage by forest fires, the summer months being distinguished by fairly frequent rainstorms. Dry years, however, occur periodically, and it is then necessary to have a heavier patrol and protection system. From November to February there is a heavy snowfall, usually averaging from eighteen to twenty-eight inches, providing a good means for horse logging.

Wages in recent years have ranged from $22 to $30 for fallers, buckers and skidders; $30 to $35 for teamsters; $50 to $100 for cooks, clerks and foremen. No particular hardships or difficulty has been encountered by lumber operators with their employes. Year after year the same crews work for the same companies. In the mills at Kenora English-speaking and French-Canadian population is chiefly used. Wages usual for mill workers range from $1.75 for laborers to $2.50 to $4 for semi-skilled laborers.

Briefly, the type of forest is composed of White Spruce, Jack Pine, Tamarack, Popular, Balsam Fir and bush with occasional areas of immature white and red pine, Black Spruce in swamps and muskegs. Widespread forest fires occurring during the days of railroad construction and mining booms (20 to 30 years ago) have caused a more or less uniform growth and even aged stand composed of the fore-named species. The general upland association of trees is ideally suitable for pulp manufacturing purposes, i.e., spruce, balsam, poplar, jack pine. The age of the general forest indicates vigorous condition. Diameter sizes (at breast high) as a rule vary from: Spruce, 6 to 11 inches; poplar, 6 to 14 inches; jack pine, 6 to 14 inches; balsam, 6 to 12 inches. A preliminary examination, made by the Ontario Crown Lands Department, showed the average stand over the productive area to be as follows:—

Spruce, 20 per cent.; popular, 30 per cent.; balsam, 20 per cent.; jack pine, 30 per cent., and that the average acre would yield about 9 to 15 cords of pulp wood per acre—a very fair quantity compared with Quebec operations.

Approximately, 55 per cent. of the entire watershed tributary to the proposed mill site is said to be forested with the above stand. The timber is young, thrifty, normally sound, although the poplar in the larger diameters is affected with butt heart rot.

Practically all of the species represented are suitable for pulping purposes with an average diameter, breast-high of, say, 9 inches and height of 65 feet.

Considering a direct tributary area to the east of the Lake of the Woods of 4,000 square miles, the productive proportion of 2,000 square miles (50 per cent. productive) gives a grand yield of 12,800,000 cords of pulp wood.

An effective patrol can be enforced at a cost of less than $3 per square mile, which is based on one-half cent per acre. The innumerable water bodies, muskegs baldridges, interrupt the course of any serious conflagration. Persistent patrol by capable woodsmen following the water courses is all that is immediately necessary. Travel is very light through the region, although on the big lake the tourist traffic, which is increasing, will need more extensive guarding. However, the average figure of one-half cent per acre will be sufficient for some time to come.

The proximity and accessibility of the pulp areas to drivable streams and lakes is an added feature of this location, the average distance from mill being 3-60 miles. As a general rule, the drives are all landed in the Lake of the Woods and Kenora by late July and August. Improvements made at strategic points by those loggers using these waters provide ample storage and water for any quantity of logs.

MR. HASTINGS' NEW GROUND WOOD MILL A MODEL.

The new ground wood mill of the Cliff Paper Co., of which Mr. Arthur C. Hastings, president of the American Paper & Pulp Association, is president, was opened the latter part of last month. We have pleasure in promising our readers an elaborate illustrated description of this plant by Mr. H. F. Storer, C.E., the engineer. The equipment includes two Voith Magazine Grinders using together 2,500 h.p., driven by a single motor. These grinders have automatic feed and are charged once in 24 hours. The entire equipment of the mill, refiners, screens, deckers, etc., are all supplied by the J. M. Voith Co., Inc., the famous German engineering firm. The editor of the Pulp and Paper Magazine spent a day at Niagara Falls during the opening of this plant. It is a pulp mill which more resembles a power house than anything else, and is one of the most remarkable developments in the ground wood industry which we have seen. The main point is the reduction of labor cost on such a mill. Mr. Hastings expects after things are in running order to run his complete 40-ton ground wood mill with one man, which is a remarkable showing. Those in the vicinity of Niagara Falls are recommended to pay a visit to this model ground wood mill, and see the most up-to-date ground wood installation on this continent.

CANADIAN FOREST PRODUCTS LABORATORIES

The Forestry Branch of the Department of the Interior has taken a modern and advanced step in the preservation of our forests and the utilization of forest waste.

Hon. W. J. Roche, Minister of the Interior, and Mr. R. H. Campbell, the efficient Dominion Director of Forestry, have consummated plans and have had estimates put through the Dominion Parliament for the establishment in Canada of Dominion Forest Products Laboratories.



HON. W. J. ROCHE, Minister of Interior

This departure will be one of the most modern advances in the scientific and conservation lines which our Government has taken for a number of years.

Plans have been under consideration with Dr. Frank D. Adams, the Dean of the Science Faculty of McGill University, for about a year. Dr. Roche has taken a great interest in the Forestry Branch, and is especially enthusiastic over this new departure, the plans for which have been completed by Mr. Campbell. The laboratory will be modelled after the Forest Products Laboratory of the United States at Madison, Wis., and also after similar organizations in Germany and England.



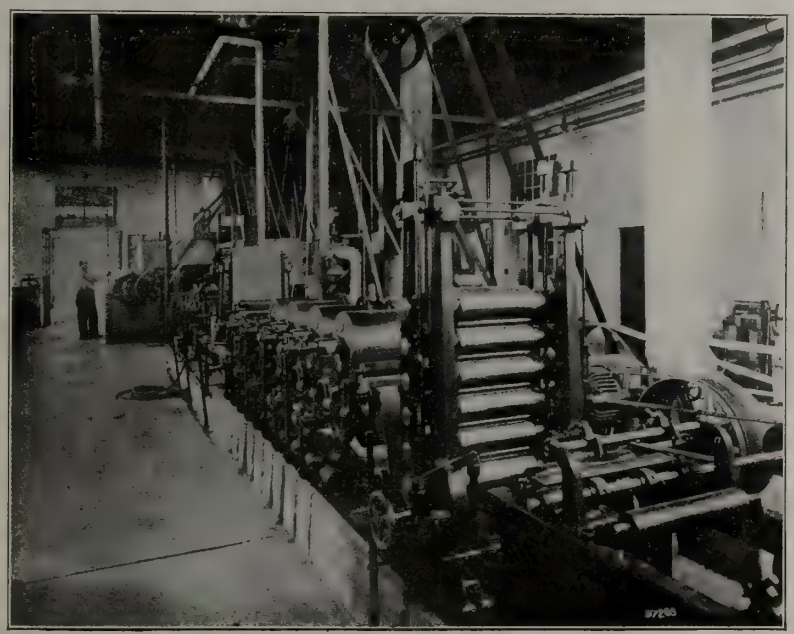
MR. R. H. CAMPBELL, Dominion Director of Forestry, who has earned the thanks of the entire Pulp and Paper Industry.

It is a well known fact throughout the pulp and paper industry of the United States that the work of that laboratory has been a great benefit to the industry in



U. S. Forest Products Laboratory, Madison, Wisconsin, after whch the Canadian Laboratories will be modelled.

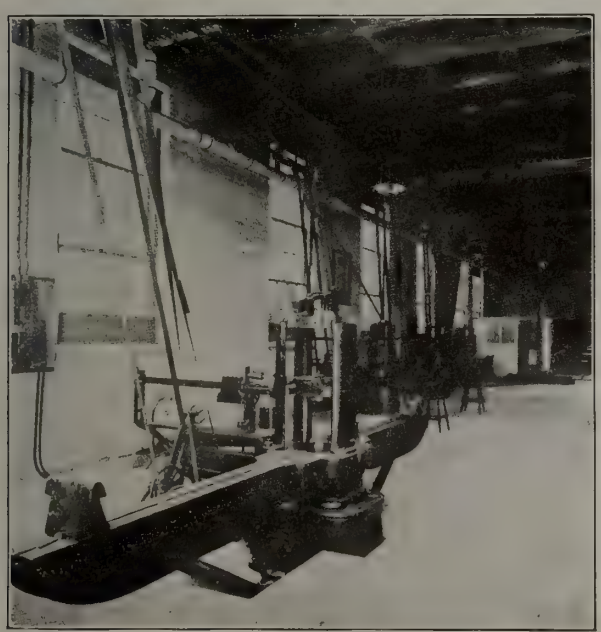
its operations, and in the conservation of the raw material. Many mills at the present time are operating in the United States on a basis recommended by this laboratory. They are now giving attention to the elimination of waste, not only in securing the supply of pulp wood, but also in its conversion into pulp and paper.



Paper Machine, U. S. Forest Products Laboratory, Madison, Wis.

The fame of that laboratory has become world-wide, and they are now considered authorities on many phases of forestry and pulp and paper work.

It is proposed to establish the Canadian Forest Products Laboratories in Montreal, and operate them in conjunction with McGill University, temporarily, at least. The University will provide the accommodation and the Government will provide the funds, machinery, apparatus, and staff.



Machines for Testing the Mechanical Properties of Woods, U. S. Forest Products Laboratory.

Investigations will be conducted in wood preservation, utilization of forest waste, timber testing, all branches of pulp and paper investigations, mill operations and any phases of forestry which present opportunities for utilization of wastes or more economic methods of manufacture.

The minister has given the assurance that the work will not be hampered by any lack of funds, and any investigations which promises to be of benefit will be heartily supported by the Government.

The first year will be spent chiefly in gathering information and data on the work which has been done by similar institutions in the United States, Germany and England. The policy of operation will be outlined and a definite system established. Mr. Campbell, the director, has already on hand a number of problems to be solved for various lumbering interests in Canada. The enthusiasm with which some of these people have received this innovation is most marked, and assures the Government of the hearty support of all concerned.

At the inauguration meeting of the Canadian Pulp and Paper Association, the following resolution was unanimously passed:

"Resolved, that this Association of the Pulp and Paper Manufacturers of Canada places itself on record as being heartily in sympathy with the proposed Forest Products Laboratories of the Dominion Government, and that we pledge our united and enthusiastic support."

The Government and the Director of Forestry have earned warmest thanks of the entire pulp and paper manufacturing industry in this advanced step.

The work will be in charge of A. G. McIntyre.

NEW SULPHITE MILL FOR THOROLD.

The MacCormack interests, who are completing a new two-machine news mill at Thorold, Ont., have decided to build a seventy-five-ton sulphite mill immediately. They are purchasing their wood from Anticosti Island, delivered to the mill on the Welland Canal in barges. The new machines are 200 inches wide and driven by steam turbines. The grinders are electrically driven. Mr. Warren Curtis, Jr., is the manager at Thorold.

PROVINCIAL PAPER MILLS CO., LTD.

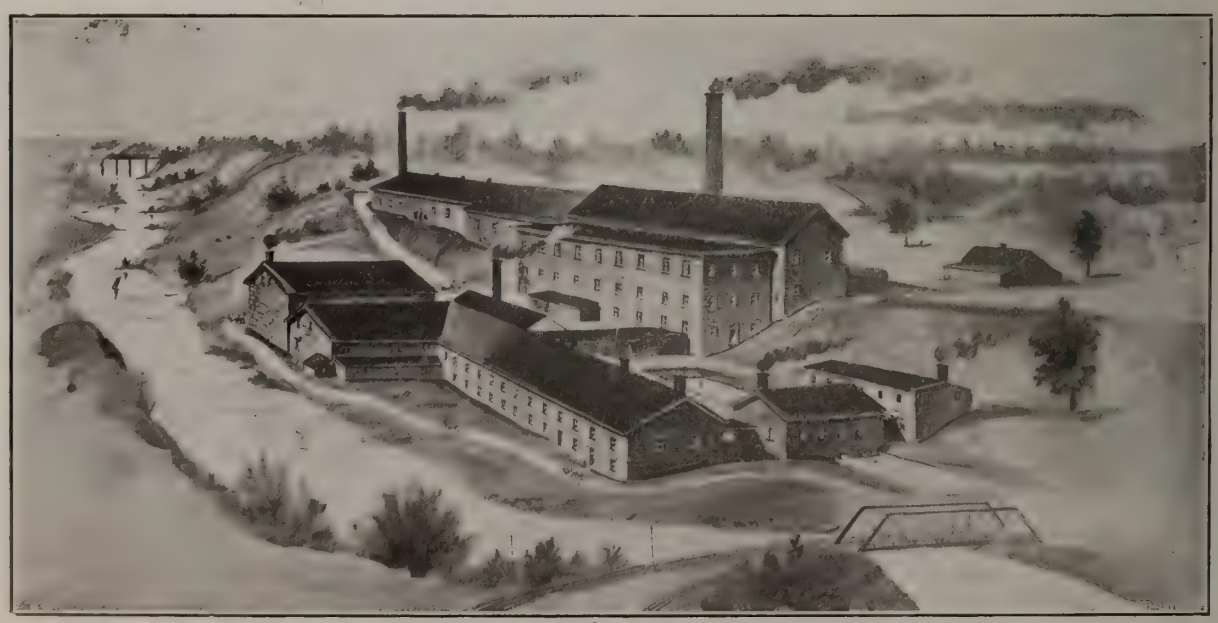
Incorporating the St. Lawrence Paper Co., Ltd., and the Barber Paper and Coating Mills, Ltd.

The Provincial Paper Mills Co., Limited, has been formed with a share capital of five million dollars, divided into fifty thousand shares of one hundred dollars each, twenty-four thousand shares of which will be seven per cent. cumulative preferred stock. The understood that wide powers and large authorized capitalization have been secured in order to make any extensions that may arise in the future. New officers will be elected at the organization meeting, and it is likely that the present names of the companies may be



Montrose Division, Provincial Paper Mills Co., Ltd.

head office of the company will be in Toronto. The new concern will take over the St. Lawrence Paper Mills Company's properties at Mille Roches and Thorold, Ont., and also the plants of the Barber Paper & Coating Mills at Georgetown. The combined author- dropped and all do business under the title of the Provincial Paper Mills Co., while the different plants will be known as the St. Lawrence Division, the Montrose Division, and the Georgetown Division. The plant at Mille Roches, or the St. Lawrence Division, has two



Paper Mills of the Georgetown Division Provincial Paper Mills Co., Ltd.

ized capital of the St. Lawrence and Barber Companies is three million dollars, and while the new organization, which will consolidate these interests, will have an authorized capital of five millions, yet this full amount of stock will not be issued at present. It is paper machines, 120 and 136 inches wide, respectively, and the output will continue to be principally book papers of various weights. The capacity is about thirty tons per day. At Thorold the Montrose plant has two machines, one 96 inches wide and the new one, 140



Coating Mill of Provincial Paper Mills Co., Ltd., Georgetown Division.



New Dam on Credit River, Provincial Paper Mills Co., Ltd., Georgetown Division.



MR. S. F. DUNCAN, the General Manager and Vice-President.



East Wing to Provincial Paper Mills Co., Ltd., St. Lawrence Division—before additions

inches, which will be put in operation the second week in June. The product will be about 25 tons daily, and will consist of book, bond, ledger, and specials. At



Power House, Merritton, Ont., Provincial Paper Mills Co., Ltd., Montrose Division. Supplies power to Interlake Tissue Mills as well.

Georgetown, in the Barber mill, book and special lines will continue to be made on the two machines and in the plant, formerly known as the Canada Coating Mill, the seven machines will turn out coated papers of all kinds. The total output of book, writing, bond and other papers will be about 65 tons per day on the six machines of the company, while the coating plant has an equipment of seven machines. The St. Lawrence Paper Mills Co. have recently completed at Thorold a well-equipped power house, which has eight 33 horse power horizontal turbines, direct connected to two 475 K.V.A. generators, capable of generating approximately 1,000 horse power under a 14-foot head. Power is also supplied to the Interlake Tissue Mills. The Provincial Paper Mills Co. will specialize at the different plants on special lines of paper, which, it is confidently expected, will increase the output and also the earnings. The present officers of the St. Lawrence Paper Mills are I. H. Weldon, President; T. A. Weldon, Vice-President; and S. F. Duncan, Secretary-Treasurer and General Manager. The officers of the Barber Paper & Coating Mills are G. R. Copping, President; I. H. Weldon, Vice-President and Secretary; and S. F. Duncan, Treasury. The financial interests in the two concerns are largely identical, and, beyond consolidating the interests under the one management, there is not likely to be any radical change in policy. All the plants are now operating to capacity and a busy spring season has been enjoyed.

WHO'S WHO IN THE CANADIAN PAPER INDUSTRY

The First of a Series of Monthly Articles to Appear in the Pulp and Paper Magazine

I. H. WELDON

President of the St. Lawrence Paper Mills Co., Ltd., now President of the newly organized Provincial Paper Mills Co. Ltd.

By W. A. CRAICK

When the Canadian Pulp and Paper Association was organized early in the year, there was unanimity in the choice of the man who was selected to act as chairman of the book paper division. I. H. Weldon, of the St. Lawrence Paper Mills Company, was regarded as the logical occupant of the position, not only on account of the large interests of his company in the manufacture of book paper, but also for personal reasons. He was a good organizer, an enthusiastic supporter of the association idea, and popular among his associates in the paper industry. His selection was a happy augury for the future of the new organization.

Mr. Weldon has been in the paper business since he was seventeen years of age. Like a good many of Canada's leaders of industry, he was born and brought up on a farm. His father, who is still living at the advanced age of 88, owned a place in Oxford County, and here the future paper manufacturer spent the first twelve years of his life. Then the family moved to Toronto and young Weldon attended school for five years in the city.

It had been his intention to take up the practise of medicine, and he had even gone to the extent of taking his first year at the Medical School, when the fates stepped in and decreed otherwise. An older brother was manager of the Toronto office of the E. B. Eddy Company, and, having nothing to do in the long summer vacation, the junior Weldon was persuaded to lend a hand at the warehouse. He liked the work, appreciated the opportunities that lay before him in business, and said farewell to the prospect of a medical career.

His experience in the paper business may be divided into four chapters, each of which has a distinct bearing on his future. There was first the introductory chapter, when, as an employee of the Eddy Company, he was given his grounding in the elements of the business, particularly in those relating to the selling end. Here he learned about qualities, sizes and quantities, about methods and prices, markets and discounts,—in short, a little about everything.

This primary course of instruction lasted several years, and then began the second chapter, with his transfer from the service of the E. B. Eddy Company to that of the Laurentide Paper Company. His four-year experience at Grand Mere gave him a more specialized knowledge of the technicalities of manufacturing. Here he was in close touch with actual production and could study the operation of the machinery in the mill and familiarize himself with the various processes employed.

The third chapter of his career opened with his removal to Boston, where he took a position with the Burgess Sulphite Company. His work here corresponded with that of the University graduate who goes abroad to take up post-graduate studies. He was a stranger in a strange land, but he realized the necessity of informing himself on the most up-to-date methods in all departments of paper production. The newest mills in the world were in the United States, and, to round off and complete his knowledge of the paper business, he felt that he had to make a thorough study of conditions south of the border.

Chapter four carries Mr. Weldon along to the present time. It is concerned with his share in the organization of the St. Lawrence Paper Mills Company, in the acquisition of the business of the Barber Company, and in the formation of the Interlake Tissue Mills Company, a trio of companies which control the largest portion

of the manufacture of book, bond, writing, coated and tissue papers in Canada. This is a recent story and fresh in the minds of those interested in the paper industry of the Dominion. No one better fitted to take a leading part in the organization work than Mr. Weldon could have been found. He had youth, conviction and experience to back him up and the success of these allied companies is due in no small measure to him.

Of the St. Lawrence Company, with its two mills at Thorold and one at Mille Roches, making book and writing papers, Mr. Weldon is president and sales manager. He holds office as vice-president and treasurer of the Barber Company, with its plant at Georgetown, and is similarly represented on the Board of the Interlake Tissue Mills at Merritton, where the largest tissue mill in Canada has recently been completed. His interests are naturally most closely identified with the St. Lawrence Company, with the operations of which he keeps in the closest touch, visiting the plants frequently. He has high ambitions for this company and intends to keep its mills so well equipped as to maintain control of a large percentage of the total production of book and writing paper in Canada. With this end in view he proposes to build in time a second two-machine plant at Mille Roches and has already bought land for this purpose where the new Long Sault dam is being built.

One finds this successful official of three important paper companies a young man still on the sunny side of forty. The only evidence that years and the cares of office are telling on him is in the gradually whitening hair. Otherwise he is young in looks and in manner. He adopts the modern attitude in business life and believes that more is to be gained by geniality and approachableness than by standing on his dignity.

Shrewdness has been the complement in his character of an open-hearted and open-handed generosity which might else have held him back. He is a man who does not wear his feelings on his sleeve, being as calm in ill-luck as he is unexcited by good fortune. In his younger days, when, with a group of kindred spirits he used to spend his summers on Toronto Island, he was very fond of playing jokes on his companions and taking an occasional rise out of them. Many stories could be told of the quiet and unconcerned way in which he used to upset their plans. This playfulness has since developed into something more practical in the game of business, and it would be a very sharp fellow who could get the better of "Ike" Weldon in a deal.

Mr. Weldon is probably one of the first eastern business men to take up farming in the West as a sort of hobby. Of course, his early life on the Oxford farm gave him a familiarity with and a fondness for agriculture which doubtless influenced him to a considerable extent when he invested in a 1,120-acre farm eight miles from Edmonton. He has been operating this big farm for several years now, raising wheat and thoroughbred cattle. With the growth of Edmonton, however, and the increased value of his property, Mr. Weldon stands to make a little fortune out of his investment, when the sub-division artist gets busy on his property, as will be the case before long.

The paper manufacturer's favorite pastime is hunting, and he has been an enthusiastic sportsman ever since he left school. He is a member of three small hunting clubs and himself owns a place on Lake Nipissing, where he has paid an annual visit for the past nineteen years. A while back he also used to do some yachting, and was very fond of sailing, but he has given up this pursuit and now does his cruising on land in an automobile. He is still a member of the Royal Canadian Yacht Club, and in town belongs to the National Club. He is a member of the Canadian Manufacturers' Association and the Toronto Board of Trade, and is a supporter of the Toronto Playgrounds' Association.

Mr. Weldon's views on the condition and prospects of the Canadian paper industry may well be introduced in conclusion. They will serve to show his attitude on questions affecting the welfare of the business and give a sidelight on his personality and character. Asked as to his opinion of what the future held in store for the paper manufacturer, he replied:

"I am a bull on the paper question in Canada. Seven years ago I made the prophecy that it would not be many years before we would see more money invested in the paper manufacturing business north of the International boundary than south of it. We have here the water and the wood, and we'll soon have the people. Mark this,—the Dominion of Canada owns 38 per cent. of the world's supply of pulp wood, yet she is only producing 4 per cent. of the world's paper.



MR. I. H. WELDON, President of the St. Lawrence Paper Mills Co., Ltd., now the newly organized Provincial Paper Mills Co., Ltd.

The United States has 18 per cent. of the world's supply of pulp wood and makes 42 per cent. of the paper. The conclusion is obvious.

"Five years ago I ventured the prophecy that by the present time there would be $200,000,000 invested in the paper industry in Canada. As a matter of fact, within six weeks last fall, new companies with a total capitalization of forty millions were formed. Of course, some allowance must be made for the inflation of capital, but my general estimate has proved correct.

"To my mind the big development will be in news print, where there is the best chance of expansion. Otherwise the paper industry will be handicapped for some time by the narrow market and the heavy duty on all machinery that enters into the manufacture of paper."

"What are your views on the conservation question?"

"I approve of Mr. Campbell's plans. We will gain more to-day by preserving our forests from fire than by reforestation. After all, fire is destroying more timber than the lumberman is taking out, and if efforts are

concentrated on stopping this waste, great good will be obtained.

The country needs more fire rangers and a more thorough patrol system.

"As to the conservation of water powers, I believe their development is the proper solution. Give the farmer electric light and power. He will appreciate this service much more than the occasional pleasure of driving miles to look at an undeveloped waterfall. Plans should be made for the storing up of the waters in our rivers before the drying up of the streams, following the clearing of the land, makes this a more difficult problem."

Mr. Weldon is a great believer in the future of New Ontario. "I think the greatest development of coming years will take place in that part of the country. I have canoed over a good part of it, and know that all the resources and power are there for the building up of important industries."

MAKING OF KRAFT AND SULPHATE OF SODA PULP.

In reference to our article, "Making of Kraft and Sulphate of Soda Pulp," which appeared in the May 15th issue of the Pulp and Paper Magazine, we wish to correct a few statements which seem to have been an oversight.

On page 332 the article states, that the duration of cooking of chips is 18 hours. This should have said 8 hours. This space of time is used for Kraft pulp only; for bleached sulphate of soda pulp considerably less time is used.

On page 335, in regard to chemicals used, it seems to us that we haven't expressed ourselves in the sense in which we understand the chemical properties to be, which might lead to misunderstanding and possible criticism by some readers. To make matters perfectly clear, we wish to rectify the unintended haziness of that portion of our article, as follows: The name of sulphate of soda originated from the name of the chemical used to make up for loss of soda. In an average good mill, the loss amounts to about 12 per cent.; but in order to make up, a proportional amount, 16 per cent. is needed for 12 per cent. loss. The black ash, from the revolving furnace (roaster), consists principally of sodium of carbonate and carbon. The black ash and sulphate are mixed in required proportion and placed in the melting furnace, where the sulphate is reduced by the carbonacious matter to sodium sulphide, while the soda in conjunction with the organic matter is converted into sodium carbonate. The solution is pumped from the dissolving tank to the caustic soda tanks, where same is causticised in the usual manner, the lime converting the carbonate into caustic, but having no action on the sodium sulphide. The liquor now ready for cooking purpose, is principally composed of caustic soda, sodium sulphide, carbonate and a small quantity of sulphate.

We hope that this addition to our article in question will clear any doubts that might arise with regard to the statements at issue.

Yours truly,

TRACY-GOULD & IVERSON.

BECKER & CO.'S SUCCESSFUL YEAR.—ANNUAL MEETING IN LONDON.

The fifth ordinary meeting of the shareholders of Becker & Co., Ltd., Cannon Street, London, England, was held in the Hotel Cecil, London, on May 15, when the chair was occupied by the chairman of the company, George V. D. Busche.

The annual report submitted to the meeting stated that:—"The directors' reports shows a gross profit of £25,638, and after allowing for various charges, amounting to £14,412, there is a net profit of £11,226, making, with £104 brought forward from last year, £11,330. Deducting £2,801 interim dividend of 3½ per cent., the amount stands at £8,529. The report states: "It is proposed to pay a further dividend of 3½ per cent., and a bonus of 1½ per cent., making 8½ per cent. for the year, absorbing £4,002 1s. 8d., to carry £3,000 to reserve, raising this account to £10,000, and to carry forward £1,527 2s. 8d. The business continues to enjoy the confidence of its customers, as shown by the increased value of the orders on the books (last year this item was £2,193,390), and, although the turnover has exceeded one million sterling, they stand at £4,075,293 this year. The freight charges have been a very serious consideration, and without the arrangements entered into in 1911, developed in 1912, and carried still further by the amalgamation and control of the Preston Steam Navigation Co., Ltd., your company might have passed a very troublesome and profitless year. The money market has been very adverse to the company, Bank rate was maintained at 5 per cent. over the whole of the last six months, and discounts rose beyond this; it will be seen that £2,600 more this year than last was spent in this way. The directors recommend to the shareholders that the remainder of the capital, £15,000, be issued, and advise that the shares should be offered to the existing shareholders and business connections of the company in the first place at par, although they have long stood at a premium. The branch business in America, under the control of our Mr. W. P. Ryrie, has been very successful, and in its first year will add a substantial return to our next year's profits. According to the Articles of Association, all the directors resign, and are eligible for re-election."

Mr. F. E. R. Becker (Managing Director) made a lengthened statement on the position of his company. He said the company had never done such business as they had done during their past year. It was a remarkable fact for him to be able to report that up to 1924 the position of the company was already assured and there were very few companies in any trade—and none in the pulp trade—who could say that the profits of upwards of £120,000 were already earned. His company had an organization unequalled in the pulp trade, and offered a service to paper makers which no other firm even attempted to offer, and they had little to fear from competition.

The report was adopted, together with the balance sheet, and a dividend of 3½ per cent. and a bonus of 1½ per cent., making 8½ per cent. for the year, was declared.

All the directors were re-elected.

CHAMPION COATED PAPER COMPANY.

There were no dividends declared at the annual meeting of the stockholders of the Champion Coated Paper Company, the situation being well and graphically portrayed by President Peter G. Thompson, who said, "Our dividends went down the river several weeks ago."

OTTAWA TRADE NOTES

(Special to the Pulp and Paper Magazine.)

Ottawa, Ont., May 27.

The W. C. Edwards Lumber Company, which recently announced that it contemplated going into pulp and paper, has now abandoned the idea. The announcement of the company's intention had been received with considerable interest on account of the extent of its timber operations. Senator Edwards, however, has given out an interview to the effect that the firm, though it had the matter under consideration, has now decided to abandon it. It is understood that the effect the new United States tariff may have on the pulp industry has something to do with this decision.

A lumbermen's stake , subscribed by the lumber and pulp and paper interests of the city, will be a feature of the programme for the first annual meet of the Connaught Jockey Club, to be held here on June 14. It will be worth $1,200.

An amendment inserted in the Waterworks bill of the City of Ottawa by the Private Bills Committee of the Senate last week to conserve the timber and water rights of the MacLaren Company of Buckingham, lumber and pulp manufacturers, shuts out Great Whitefish Lake as a source for the city's water supply from the Gatineau Hills. It has also been made clear that compensation will have to be given for all timber rights held by private parties.

The city had figured on using McGregor Lake as a source of supply and falling back on Great Whitefish Lake later, when its population should have increased. When the bill came up the MacLaren Company was represented by Mr. Henry Aylen, K.C., who stated that his clients had rights to the timber around Great Whitefish Lake, and to the lake itself which emptied into the Lievre. Although the city promised to compensate, Mr. Aylen said the MacLaren interests did not wish to relinquish their rights on any consideration and the bill was accordingly amended. Senator Edwards then claimed timber and water rights in and around Pemichangaw and Thirty-One-Mile lakes, the only remaining available ones, and an amendment was suggested that these timber rights, too, should be preserved irrespective of any compensation. Senator Edwards, however, stated he did not want to interfere with the city's chance of getting a pure water supply and agreed to take compensation.

Although the Continental Bag and Paper Company here has practically completed putting in its new line of bags and wrappings, as it recently announced it would, it finds itself rather short of stock, and consequently has not commenced to trade actively in these new lines as yet. It is said by paper bag men that the past two weeks have been fairly quiet with the trade, prices being none too high.

The city will shortly, in all probability, put in the water meter system for business consumers. On investigation it was found that a pulp mill in the city was paying for practically only one per cent. of the amount of water it used, and other instances as flagrant were discovered with other firms.

Whether or not an export tax on pulp wood will be put on by the Government, there is no probability of its being done before next session. On account of the important issues before Parliament, the matter is being scarcely referred to in Government circles. It is pointed out, however, that only last summer manufacturers requested such an export tax and that such measures have been recommended by Canadian conservation interests.

A new use for paper in Ottawa will be supplied as soon as the city secures a pure water supply, according to members of the local Board of Health, who say they will then insist on the abolition of the common drinking cup and the issue of individual drinking cups to pupils of the various schools. Residents are now being supplied with pure water from the city's water carts and the Medical Health Officer has recommended that individual drinking cups be supplied with these,

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BRITISH TRADE

(Special to the Pulp and Paper Magazine.)

London, May 23, 1913.

By the time these lines appear in the Pulp and Paper Magazine the annual meeting and the annual banquet of the British Paper Makers' Association will have passed over and formed another chapter in the history of the Association. The date is definitely fixed for May 29, and London will be invaded by paper and pulp men from all parts of the United Kingdom. All being well, Sir Edward Partington will preside and some very important questions are to be decided. The Association, when dealing with vexed questions, discusses them in private, with closed doors. That, of course, prevents any information leaking out to the employees and any statement made afterwards is always carefully prepared and very concise. Now, one of the questions to be settled this year is relative to the recent labor unrest, viz., the pay for overtime in mills and the number of hours to be worked for a certain wage. The subject is already engaging the attention of the Association, whose members in the northern section, where the trouble started, are sitting behind closed doors trying to arrive at an unanimous decision. Apparently, there is some difficulty in coming to a decision, as several meetings have recently been held, and no doubt there are two or three who desire to favor the demands of the employee. When the annual meeting comes on the Association will make some sort of a statement for publication.

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The British trade for April, according to the figures of the British Board of Trade, has been exceptionally good, the exports reaching £313,321 for paper of all kinds, an increase of £34,627 over April, 1912. For the first four months of the year the total is £1,270,028, an increase of £93,678 over the corresponding period last year. The imports were: £634,568 (an increase of £59,306) for April and the total for the first four months of the year, £2,441,451 (an increase of £111,-296). The re-exports were: For April £17,604, an increase of £1,530; January to April £79,130, an increase of £14,612. Writing paper was exported to the value of £36,599, Canada receiving £1,586 worth, compared with £1,129 for April, 1912; printing paper to the value of £155,322, Canada receiving £14,306 worth, compared with £7,487 for April, 1912; unenumerated paper reached £13,475, Canada receiving £1,373 worth, as against £931 worth in April last year. Australia was the British mill owner's best customer for writing paper and printings, Canada occupying about a fourth position on the list. Turning to the imports, no paper of any description was received in April from Newfoundland, though in April, 1912, £357 worth was entered inwards. Nearly 38 per cent. of the total imports consist of packings and wrappings, the increase for April reaching £40,050. Strawboards also show an in-

crease of £3,174, wood pulp boards £8,842. The totals for April are: Printing or writing paper on reels, £90,785 (not on reels £71,316), packings and wrappings £241,066, strawboards £101,687, unenumerated paper £34,502. In hangings and coated papers there are considerable increases for April, the totals being: Hangings £12,855 (an increase of £11,731), printed or coated paper £24,030 (an increase of £22,627). The competing countries in the British market are Sweden, Germany, Norway and Belgium and Russia, their importance being in the order named. Germany has shown much activity lately, and German reel paper finds a good opening in the United Kingdom.

* * * *

The imports of wood pulp for April are as follows:—Bleached chemical, dry, £28,838 (compared with £12,777 in April, 1912); unbleached chemical, dry, £116,049 (compared with £96,213 in April, 1912); chemical, wet, £3,010 (compared with £1,390 in April, 1912); mechanical, dry, £1,225 (compared with £300 in April, 1912); mechanical, wet, £96.940—a grand total of £246,062 for April and an increase of £79,646 over the corresponding month of 1912. Mechanical, wet, imports were received as follows: Canada £3,096, an increase of £2,423 over April last year (January to April £6,005, compared with £10,893 for similar period in 1912); Norway, £89,096, an increase of £44,152 (January to April £300,463, compared with £206,540 for similar period in 1912); Sweden £4,748, an increase of £2,423 (January to April £43,573, compared with £18,348 for similar period in 1912. In bleached chemical, dry, Norway exported to England £12,731 worth (compared with £7,982 in April, 1912), Sweden £1,584, an increase of£1,403, and Germany £260, a reduction of £2,750 over April, 1912. Sweden takes the premier position in unbleached chemical, dry, the Swiss exports to England reaching £46,936 (April, last year, £41,929. Next comes Norway with £32,404 worth (April, last year, £23,788). Other imports were: Germany, £23,825 (April, last year, £19,880, Russia £5,600 (April, last year, £7,290).

* * * *

The influence of Canadian pulp prices over those of Scandinavian has quite recently created some feeling amongst the British agents. References to this strong feeling have appeared in the Pulp and Paper Magazine since the beginning of the year, and the question is now reopened once again by a letter that appears in one of the London trade journals. The bartering system adopted by the Scandinavians is not at all satisfactory to the British markets, and the following extracts from the letter referred to gives an idea of the very high opinion and the reputation of Canadian pulp exporters amongst those who handle the material on this side:—"Canada is plodding along nicely and, not this year, or next, but very soon our Scandinavian friends will be only getting the crumbs that fall from the Canadian table. Then they will be sore and blame everyone but themselves. At the moment Lancashire prices are higher. I heard of $11.60, c.i.f., to-day, but the warm days are coming, and Canadian pulps are coming along, and very soon there will be an avalanche of mechanical, and there will be wailing and gnashing of teeth when Scandinavians have to accept under $9.60, c.i.f., Manchester." Another extract says: "Why is it that Canadian mechanical pulp, which is without a peer, can be sold year after year with only the slightest of price differences and Scandinavian mechanical fluctuates enormously? Take an average for several years, and Canadian mechanical has been between $10.80 and $11.40 and over the same years—well, we had better not mention the Scandinavian prices! They look very bad on paper, as being the prices asked for a staple commodity by makers who are reported to be hard and level-headed business men." A concluding paragraph nicely sums up the view of Scandinavian dealings in the British markets. It reads: "All stick together and fall over each other to sell, then a sudden stop and all stand and stare at each other to see what the other is going to do. Then the close time comes, with not a pound of pulp stirring and stocks piling up, and all of a sudden there is another stampede and then sales at ruinous prices. Is it business?" That, concisely, gives the Canadian an idea of how the Scandinavians are tampering with the British markets, and if it is done on this side Canada may expect the same unbusiness-like methods in her competition with the Scandinavians in the United States markets. The fact is that British agents are getting tired of the antics of certain Swedish, Norwegian and German firms, because these antics place an agent, sometimes, in a false position, with the result that protests are becoming more general in the trade.

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For the information of Canadian wood pulp exporters a circular has reached the London representative of the Pulp and Paper Magazine, stating that on and after July 1 next, railways in England, Scotland and Wales will raise their rates. There is nothing definite about the rates, but it is expected that the rise will be close on a 4 per cent. basis. Exporters should note this advance when negotiating about contracts.

THE NEW INTERNATIONAL PLANT IN CANADA SEEMS ASSURED.

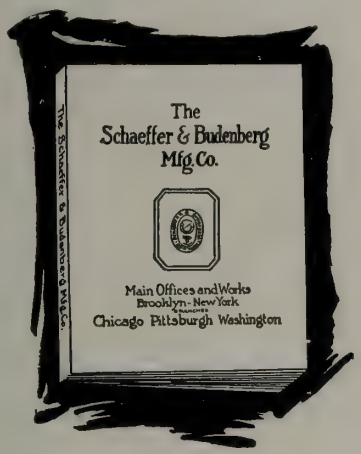
Rumors which claim to be confirmed are to the effect that the International Paper Company will erect a large news print plant at Deschenes, Que. It is claimed this plant will be larger than any other of their American mills. They have already put a number of their news machines on the other side onto book papers, and expect to make up their production from this new large plant in Canada. They have a number of other interests in New Brunswick and Quebec, but official reports claim that the above plant will be the first one developed.

OCEAN FALLS CO.

Vancouver, B.C.—Mr. Justice Murphy has refused the application on behalf of the Crane Company for a winding up order in connection with the Ocean Falls Company on the ground that the great majority of the other creditors held the view that the company should be allowed to continue operations and reorganize along the lines indicated to the court. Part of the organization scheme is to reduce the capitalization from $6,000,000 to $3,000,000. The court held the view that if the company was allowed to reorganize and continue that all the creditors would have a much better show of getting their money in full than if a winding-up order was issued. Officials of the company say there will be no difficulty in making the plant [illegible] Falls pay after it is put on a proper financial and business basis. The present management, headed by J. Hamilton Benn, M.P., has not been in control long enough to straighten out the affairs of the company. They believe that enterprise will prove a gold mine in time.

A NEW RECORDER PEN ARM TO FACILITATE THE CHANGING OF CHARTS.

Every user of Recorders has found, without doubt, the changing of charts to be a continual source of annoyance, as well as a time-consuming operation,



owing to the obstruction caused by the practically rigid pen arm.

The lifting of the pen arm from the chart-holder, retaining it in a strained position with one hand, while the chart is changed with the other, requires considerable practice and dexterity to accomplish without spilling the ink or soiling the chart.

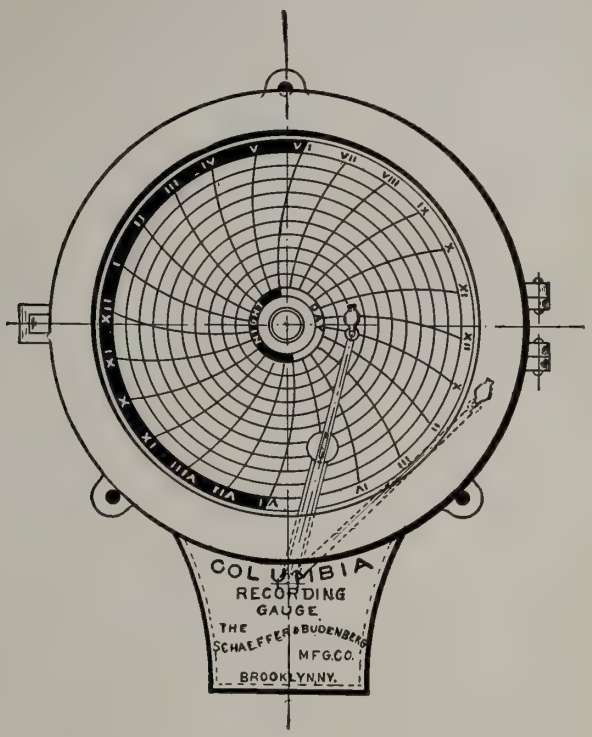


The Schaeffer & Budenberg Manufacturing Company, of Brooklyn, New York, have applied for patents on a new recording pen arm, to be used exclusively on their "Columbia" Recording Gauges, "Columbia" Recording Thermometers and "Columbia" Tachometers. This improved pen arm has been designed with such practical ingenuity that it will inevitably revolutionize Recorder construction as regards the pen arm element.

If the accompanying illustrations are carefully studied, the three factors of the "Columbia" pen arm and their respective functions become clearly apparent. For convenience and reference we will name these factors "A," "B" and "C" respectively. "A" is the pen arm proper, "B" its pedestal, so to speak, and "C" the adjusting screw. After carefully noting Fig. 1, your interest is invited to Fig. 2. "B," as is apparent, is directly connected to the recording element of the instrument. "A," being placed over this and retained thereby, its slight resiliency and with the aid of the pin on the adjusting screw.

When the chart is changed, "A" is drawn towards you, lifted off the pin, and allowed to drop down to the right, "B" remaining stationary. (See Fig. 2.) The obstructing pen arm thus being removed, and your both hands being free, the chart can be changed and "A" placed in its proper position again in an instant.

The adjusting screw "C" must not be forgotten, for it represents an important feature. A slight manipulation of the thumb adjusts the pen arm whenever necessary.



The Schaeffer & Budenberg Manufacturing Company have just issued a handsome and comprehensive catalogue on their "Columbia" Recording Gauges, in which the "Columbia" Pen Arm is illustrated and described. A copy will be sent upon request to anyone desiring it.

MR. F. N. M'CRAE ON RAILWAYS.

Complaints against railways were aired in the House of Commons on the initiation of Mr. W. F. Maclean, who asked the House to adjourn in order that he might instruct the Railway Commission that they have no right to allow discrimination in railway freight rates.

The Hon. Frank Oliver declared that between eastern and western Canada the railway companies adjusted their freight rates to absorb as much as possible of the customs tariff protection given eastern manufacturers. He said that this was the reason American manufacturers were able successfully to compete in Western Canada with the Eastern Canadian manufacturers.

Mr. McCrae, of Sherbrooke, president of the Brampton Pulp and Paper Co., Ltd., said that the greatest problem for the heavy shippers was to obtain cars at non-competing ports. He dealt in pulp and paper, and found while he could get a car at a competing point within twenty-four hours, he could not get a car at a non-competing point within a month.

The motion was finally withdrawn.

Proceedings at the annual meeting of the Toronto Paper Manufacturing Company were purely formal, the annual statement showing net profits for seven months of $80,973, at the rate of almost $140,000 per annum. The directors were re-elected.

UNITED STATES NOTES

(Special to the Pulp and Paper Magazine.)

According to advices from Chicago, Ill., the stockholders of the American Strawboard Company have ratified the action of the Board of Directors for reducing the capital stock of the company from $6,000,000 to $3,000,000. A resolution has been passed authorizing the issue of $1,000,000 six per cent. debenture bonds to be offered to stockholders on a pro rata basis.

The report of the Niagara Falls Power Company for the year ended December 31, 1912, which has just been issued, (including income of the Canadian Niagara Power Company), shows net earnings of $2,032,099, against $1,802,826 in 1911. The balance available for dividends was $927,858, equal to 16.1 per cent. on the capital stock outstanding, as compared with 11.92 per cent. the previous year.

The American Writing Paper Company, of Holyoke, Mass., is planning to secure enough papermakers to put the three-tour, eight-hour system into operation in the immediate future, and is making every effort to enroll a sufficient number. Some time ago the company announced that eventually the three-tour system would be inaugurated in the several divisions, but it will take some time to secure the number of men necessary.

The International St. John River Commission held a meeting at Van Buren, Me., on May 16, by request of the War Department to hold hearing for the purpose of ascertaining if there is any objection to the proposed international railroad bridge across the St. John River at that point. No objections were raised and several American and Canadian speakers were emphatically in favor. Much lumber and pulp wood will come across the railroad, if it is built, according to expectations.

The big fire in the sawmill plant of the Berlin Mills Company, at Berlin, N.H., several weeks ago, which caused a loss of more than $400,000, will not interfere with the manufacture of pulp and paper by the company. The transformer plant on the river was not damaged by the fire. The building is of cement and brick, so that any embers that fell on its roof were harmless. That the work of the company in taking care of the paper end of the business will be carried on more rapidly this year than ever before is shown by the fact that the season's cut of logs is still in the river. Less pulp wood will be imported from Canada than ever before. The burned property, which was fully insured, included the big sawmill valued at $300,000, the barker plant, worth about $50,000, and considerable lumber, tools, etc., and other property in the vicinity of the mills.

H. E. Tidmarsh, who has been president and general manager of the Friction Pulley and Machine Works at Hudson Falls, N.Y., one of the leading manufacturers of pulp mill grinder machinery in the country, has assumed charge of the business affairs of the Green Bay Barker Company, at Green Bay, Wis., and also the Canadian Barker Company of Sault Ste. Marie. The company will not only make the barkers, but all machinery needed to equip a wood room of a pulp mill, and also a general line of pulp mill machinery. Mr. Tidmarsh is general superintendent of the plants and in charge of the sales of both concerns. The officers of the company are confident that the new line of machinery will reach as high a standard as the barker, which is known as the Roberts and Libert barker. Mr. Tidmarsh has been connected with the Friction Pulley Company for 22 years, and is widely known in the paper industry. Machinery for the Canadian plant is being shipped to Sault Ste. Marie now and operations will be started in a short time.

The schooner George B. Edmunds, from Nova Scotia, arrived at Richmond, Va., on May 19 with 1,000 tons of wood pulp for the Richmond Paper Company. Aside from being the largest consignment of the product ever shipped direct into that city, the arrival of the cargo is significant as a pointer indicating the shipping possibilities of the port. Most of the wood pulp which is consumed in large quantities at this place, has in the past been shipped to Newport News, where it was transferred by barges for shipment to Richmond.

The St. Louis Republic of March 29 last printed on twelve kinds of print paper made from new wood sources furnished by the United States Forest Service. In charge of this experiment were J. H. Thickens, of the Government Laboratory, at Wausau, Wis., and C. P. Winslow, of the Madison, Wis., laboratory. It was the first test of the kind made by the Government. Should these new woods prove successful, says the Republic, the high price of paper will be cut materially, the news print industry will revert from Canada to the United States, difficulties caused by the scarcity of spruce will be relieved, and a new use will have been found for many of the trees which occur in the natural forests. The woods tested were Sitka spruce, western hemlock, red fir from the west, logpole pine, western larch and western yellow pine from the Rocky Mountains, tamarack, hemlock and balsam from the Lake States. In addition to paper from each of these woods, three combinations of two kinds of wood also will be tested later. About three years ago the Wausau Laboratory was established for the express purpose of testing woods to find their suitability for news print paper. The laboratory is equipped with machinery of commercial size and the work carried on under conditions which can be duplicated commercially. The woods were ground at the Government laboratory and sent to commercial paper mills where the pulp was mixed with 25 per cent. sulphite pulp and made into news print paper rolls.

Wm. H. Milspaugh of Sandusky, Ohio, has just been granted additional patents on the Milspaugh suction roll. The additional patents cover new points and improvements in the former roll.

HOWARD SMITH PAPER MILLS, LTD.

The plant of the Howard Smith Paper Mills, Limited, Montreal, Quebec, just completed, is situated at Beauharnois, Quebec, twenty-two miles south of Montreal, on the New York Central Railroad, Adirondack Division, and the Grand Trunk System, and is now in operation.

The mill is built for a two-machine loft dried plant, the plans being so laid out that it can be enlarged to a four machine mill if the trade in the country warrants.

The main biulding, 164 feet long by 82 feet wide, four stories and basement, concrete floor being laid for the main floor and steel columns and girders to remaining floors. This building will be used as follows:

Basement—Reinforced concrete drainers and main transmission lines; also a 250-horsepower Corliss engine to be used as an auxiliary source of power should anything happen to the electric transmission lines.

Main or first floor—Beating and washing machines, Jordan engine, paper pulper, cutters, plater and supercalender.



View of the Howard Smith Paper Mills, Limited, new mill, Beauharnois, P.Q.

Second floor—Rag preparing and dusting machinery, sorting tables, etc., sheet calenders, breaker calender and trimmer.

Third floor—Rag thresher, paper dusting and sorting and jogging room.

Fourth floor—Used entirely for dry lofts.

The machine room is a building, 220 feet long by 65 feet wide, and is large enough for two machines, one of which is now being installed. In the basement of this room and directly under the dryer part of the machine is the filter plant, a gravity system with a capacity of 2,500,000 gallons per 24 hours.

The beater room is 165 feet long and 85 feet wide. The variable line of the paper machine is directly connected to a variable speed engine, and the constant speed line is belt driven from a steam engine, the exhaust from both engines being used in the dryers.

All the water used on the paper machines is furnished by an individual triplex pump connected to the filter, a constant pressure on the showers being maintained at all times.

The rotary room is 50 feet by 40 feet, and is arranged for two rotary bleach boilers, one of which is now installed.

In the basement of this building the bleach mixing, bleach storage, lime mixing and size making apparatus is located. The Max Erfurt size system, which is rapidly being adopted by all the leading mills, is used.

The boiler house is 63 feet by 50 feet, and is equipped with three 150-horsepower horizontal return tubular boilers with induced draft.

The finished paper will be loaded on cars from building to railroad siding running along the entire south side of mill. There is also a railroad siding running the entire length of the north side of the mill on which all the raw material will be delivered.

The officers of the company are as follows: President, C. Howard Smith; Vice-President, John C. Newman; Directors, H. C. Courtney, J. J. Meagher, F. G. O'Grady; Secretary-Treasurer, T. A. Hubley. The mill manager is H. C. Courtney.

C. Howard Smith, the president of the company, has long been identified with the paper business in Canda, having carried on the Howard Smith Paper Company, of Montreal, the largest paper jobbing house in the Dominion. The new building is the outcome of his energy and enterprise, and the plant will start under the most favorable circumstances.

The mill will cost, when complete, about $500,000, and will employ about 150 hands.

This mill is the second loft dried mill erected in Canada, there being only one other, and as the imports of these papers are large there should be ample business to keep these machines running, and is equipped to make the finest grades of tub sized loft dried papers.

WAYAGAMACK NEW PLANT NEARLY READY.

The machinery for the big extension to the Wayagamack Pulp and Paper Mill has been landed on the company's property. Extension has been added to the main plant right next to the Kraft Paper Mill, and this is now ready for the installation of the machinery. In the new department the company will manufacture smooth-faced wrapping paper, for market in Canada, and on this account a market will be easily found from the outset. The machinery is being installed as rapidly as possible in order to have the new plant in operation by the end of June.

AN IMPORTANT ADDITION TO CANADIAN INDUSTRIES

To the ever increasing number of new Canadian enterprises an industry has been recently added, which will be of special interest to our Canadian paper mills.

Vera Chemical Co. of Canada, Ltd., announces that their new plant at Burlington Junction, Ontario, has been completed, and that Vera Size is now being manufactured and shipped to Canadian Mills from this plant.

This company has always been a sincere believer in quality and its plants at North Milwaukee, Wis., U.S.A. and Stoneham, Mass., U.S.A., have built up for Vera Rosin Size an enviable reputation solely by carefully guarding its quality which is guaranteed to be 100% in cleanliness and unfailingly uniform.

Vera Chemical Co. have been pioneers in the manufacturing of high grade rosin sizings and the high standard of rosin size demanded by the paper makers of to-day is solely due to the painstaking efforts of the Vera Chemical Co. along these lines.

The equipment of their new plant at Burlington Junction, Ontario, comprises all their latest improvemnets in patented apparatus based upon 15 years of scientific researches and experience in the making of rosin sizing.

The almost phenomenal success with which Vera size had been introduced into the United States and the ever increasing demand from Canadian mills, necessitated the erection of the Burlington Junction plant, and suggests that building up trade upon quality and fair dealing has proved a great success.

This company is very favorably known throughout the paper mill trade of Canada and America for its untiring efforts to give its customers full satisfaction and paying close attention to their individual needs. Customers of Vera Chemical Co. are always sure to be treated right in all transactions.

Among the many successful innovations introduced by Vera Chemical Co., special notice should be made of the delivery of rosin size in tank cars. This service has been a source of great economical advantage to the many mills which have adopted this method since its first installation several years ago. It is a modern idea which no up-to-date mill will fail to recognise as it entirely eliminates waste and untidy conditions, besides giving a great saving in purchase price and labor.

The many Canadian friends and customers of Vera Chemical Co. will join us in wishing them good success in their new enterprise in Canada.

THE ASHCROFT MANUFACTURING CO.

An exhibit that was especially interesting to most of the printers at the recent exhibit in New York was that of the Ashcroft Manufacturing Company. The hundreds of printers who stopped at this booth got information that would save them lots of money and trouble in the futuree.

Mr. L. H. Bogart and Mr. R. F. Woolf were in continual attendance showing the printers how to buy paper intelligently so as to be sure to get the quality desired and to stop rejections. Printers were shown how to detect by surface examinations the sizings used and any faults the paper might have.

The Ashcroft Paper Tester and Guages were also demonstrated so that in the near future the printers would be sure of getting exactly the kind of paper required to do the work.

Many orders for these testers and guages were taken and both Mr. Bogart and Mr. Woolf felt that the exhibit would do a world of good in educating the printers in the buying of paper.

NEWFOUNDLAND PULP AND PAPER NOTES

Curling, Nfld., May 24, 1913.

The first steamer to arrive at Botwood this season for a cargo of pulp and paper, was the Tritonia, of the Ronaldson Line, which ship reached port from Manchester on the night of April 23. She sailed again on May 6, for Manchester, with 3,700 tons of pulp and paper.

The A. N. D. Company, operating at Grand Falls, have 50,000 cord of pulp wood on the banks of the Badger River, and 150,000 cords on the banks or Red Indian Lake and Victoria River.

During the past winter the Timbers Estate people operating on the Exploits, have put in over 3,000,000, at a cost of $1.50 per thousand, at which the men cleared from $25.00 to $40.00 per month besides their board.

H. Crowe has had 25,000 cord of pulp wood cut on the banks of the Badger the past season. This he has sold to the Anglo-Newfoundland Development Company, of Grand Falls.

The Albert Reed Company, operating at Bishop Falls, have had a large cut of pulp wood the past season but the exact figures are not yet to hand. On a whole the past winter was a very satisfactory one as far as weather conditions were concerned for the loggers and pulp wood cutters.

The dam at Campbellton, for the Horwood Company's pulp mill will be pushed rapidly to completion. The dam will measure 2,700 and will have a drop of 20 feet. Eight hundred feet of the pier, which will be 1,200 feet over all, have been completed. The capacity of the mill will be about 20 tons per day. The mill is being erected at a cost of $150,000.

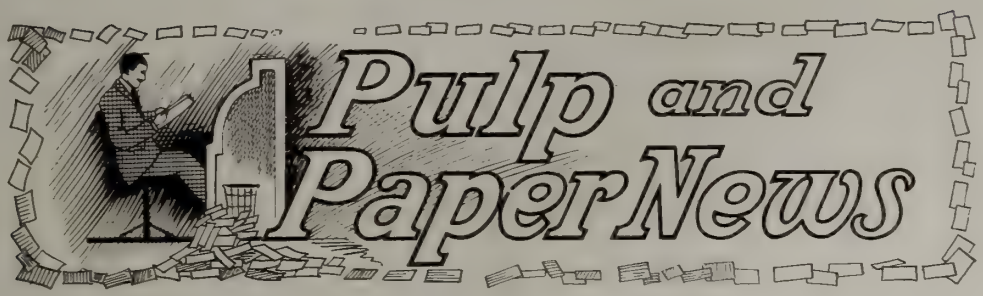
The Anglo-Newfoundland Development Co. have three drives per year, namely: One from Badger River in May; one from Millertown on Red Indian Lake in June; and one from Victoria River in August. They are now preparing for the Badger River drive, which will contain 30,000 cords. The drive averages about a mile per day.

At a recent visit to Grand Falls paper mills, there were 500 men employed. There are five paper making machines in operation with a capacity of 180 tons in twenty-four hours. And as one and three-quarter cords of wood go to make one ton of paper, the mills consume 315 cords of wood daily. They cut up as high as 40,000 pieces from 8 to 24 feet long per day.

It is claimed by parties who have gone over the A. N. D. Co.'s area of timber limits that there is at present in sight sufficient material to supply present capacity of the Grand Falls mills for fifty years. Considerable effort is being made to prevent further ravages by forest fires.

Considerable capital has been subscribed towards the proposed pulp and paper works at Deer Falls, but no construction has yet been done. The property contains some of the best timber limits in the colony.

There has been a steady advance in the price of lumber during the past few years, and indications are that there may be a still further advance in the very near future.—A. L. B.



The Stanley Paper Co., Calgary, Alta., has commenced a wholesale business.

The Clark Bros. Co., Ltd., has commenced a wholesale paper business in Edmonton, Alta.

John R. Barber, of Georgetown, Ont., is spending a few weeks at Dr. Meyers' hospital in Toronto and is reported to be considerably better.

Thomas Gain, sales manager of the Don Valley Paper Mills, Toronto, has returned home after spending a couple of weeks at various points in New York and Pennsylvania.

The S. B. Foote Co., Limited, have been incorporated in Canada, to do printing, advertising and publishing in all its branches. W. R. L. Shanks is the chief incorporator.

The Howell Co., of Toronto, have opened a large new warehouse in conjunction with the Standard Paper Co. at Grey Street, Toronto, from where they will conduct their enlarging business.

The George Powley Paper Co., 245 King Street West, Toronto, have removed their offices and warehouse to 62 John Street, south of King Street, where they have greatly enlarged quarters.

E. S. Munroe, of Wilson, Munroe & Co., Toronto, is on an extended business trip throughout the West and will visit all the important centres as far as Calgary. He will be absent until the middle of the month.

Harry B. Wood, of Manchester, England, and his son, Cedric Wood, were in Toronto and Montreal and other centres during the past week on business. He is a well-known exporter and importer of ground wood pulp.

W. P. Gundy, vice-president of the Canadian Pulp and Paper Association, has been elected president of the National Club, Toronto. Mr. Gundy is also vice-president and general manager of the W. J. Gage Co., and vice-president of the Kinleith Paper Co.

Hind & Dauche Paper Co., of Canada, have about completed the installation of their 124-inch board machine in Toronto, which will have a capacity of 40 tons per day. They will themselves consume about half their production and will market the remainder.

It is expected that the new mill of the Montrose branch of the St. Lawrence Paper Mills at Thorold, Ontario, will be in operation by June 10th. C. F. Redmond, who has been superintendent of the present plant for a number of years, will also have charge of the new branch.

E. H. Wilkinson, of Toronto, representative of New Brunswick Pulp & Paper Co., Millerton, N.B., who has returned from an extended trip to the coast, reports the paper business in many of the western towns is rather slack owing to the tight conditions of the money market.

W. H. Rowley, president of the E. B. Eddy Company, was in Edmonton on May 13 on business for his company. He was accompanied by J. B. Persse, president of Tees & Persse, Limited, who represent the E. B. Eddy Company from the head of the lakes to the Rocky Mountains.

P. P. Wesbye, Peterborough, has patented a new centrifugal screen, which has the chambers divided into sections and has a very large screening capacity. The sizes which are being built are 30 tons on less than horse power per ton. Mr. Westbye also controls the Ruth screen in Canada.

James L. Chambers, of Chambers, Limited, has moved his offices from room 10, in the Peterkin building, Bay Street, Toronto, to room 202 in the same building, where he has larger and much more attractive quarters. Mr. Chambers' new offices are nicely laid out. He left this week for the Old Country on a business trip.

Brown Bros., Limited, Toronto, are offering their present warehouse at 51 Wellington Street West, for sale. The firm will in a few weeks remove to the building at present occupied by Rolph & Clark, Limited, at the corner of Simcoe and Pearl Streets. Rolph & Clark are erecting a new business home east of the Don River.

Mr. J. L. McNichol, manager of the paper plant of the Barber Paper & Coating Plant at Georgetown, Ont., has resigned and sailed for England on May 17th, where he will spend some two months looking into some paper matters in connection with India. Later he will return to Canada, and it is rumoured will be connected with a new specialty mill probably to be started in Toronto.

Oswald A. Porritt, general manager of Price Bros. & Co., Limited, who recently resigned is making a short trip through Ontario and Quebec, and will interest himself in the development of one of the new mill projects which have been mooted for some time. He will later go to the Pacific Coast with a view to investigating one or two propositions which are opening up in British Columbia. The rumors regarding his connection with the Rudd Rope Box Co. is denied.

Wm. D. Gregor, formerly superintendent of the Oxford Mills at Rumford Falls, Me., and for the last year superintendent of the Price Bros. Paper Mills at Kenogami, has been appointed manager at the mills. The executive management will be in the hands of Mr. J. M. McCarthy at the head office in Quebec City. These two gentlemen will carry on the work formerly done done by Mr. Porritt.

F. L. Ratcliff, president of the Ratcliff Paper Co., Toronto, leaves next week for England. He is a member of the Rennie Rink of bowlers, one of the seven quartettes from Ontario who will tour Great Britain. The bowlers will spend two months on the Old Country greens. Mr. Ratcliff will combine business with pleasure while abroad.

Hon. Adam Beck, of London, box manufacturer, who has been suffering from a partial breakdown as a result of the ceaseless activity in connection with his own and the Government business, has been ordered by his physicians to take a rest and will leave shortly for England on an extended trip.

The Thorold Board of Trade will invite Hon. Frank Cochrane, Minister of Railways and Canals, to turn the first sod on the new Welland ship canal at Thorold. The pulp and paper manufacturers along the old Welland canal are taking the greatest interest in the new waterway which will mean so much to them in improved transportation facilities.

A proposed straw board mill for Regina which has been under consideration for some time promises to materialize in the very near future. This firm, The Flax Products Company, will manufacture building paper, wall board, chip board and straw board. The western market is very wide, and they anticipate a promising outlook for this newest development.

The forest reserve area of the Dominion of Canada will be materially increased by a bill which has been introduced into the Federal Parliament increasing the forest reserves from 24,042 square miles to 35,767. The increase lies chiefly in the railway belt at British Columbia, 1,666 miles; in Northern Manitoba, 523 miles; in Saskatchewan, 864 miles, and in Alberta, 7,706 miles. The new reserve has been established in the Lesser Slave Lake district.

Mr. White, woods manager for Riordon Pulp & Paper Co., reports their drive of one and a half million down to safety where short water cannot affect it. He further states that they have had no rain in that district for six weeks until recently, and that many drives in that district will be held up, on account of the remarkably dry season. This will, it is feared, further affect the price of pulp wood, which will be scarce in any case on account of the short cut.

The Hebrew Publishing Co., of Toronto, has been incorporated with a share capital of $40,000, to engage in the printing and publishing business. The incorporators are Simon Goldenberg, Abraham Rabinowitz, Harry Lapiner, Harry Hirsh, and Abraham Scher. The Photo Specialty Co., of Streetsville, has also been granted a charter to carry on the business of photographers, engravers, printers and lithographers. The incorporators are Athol Geoge Robertson, Alice Lawrie, Marie Powers, and James J. Kew, of Toronto, and Arthur Gordon Smith, of Streetsville.

The St. Lawrence Pulp and Lumber Corporation at Grand Pabos, P.Q., in which Mr. Whitmer of the Wm. Whitmer & Sons, Philadelphia, is the major stockholder, turned the sod last week for their new sulphite mill near Campbellton, which will be of 100 tons capacity and will be completed to use next season's cut. At the present time they are building 18 miles of railroad into the mill site and expect to have the construction well under way before the cold weather in the fall. They will manufacture high-grade, easy-bleaching sulphite, chiefly for the American market.

J. M. Dent, founder of the well known English publishing house of J. M. Dent & Co., and the creator of the Temple Editions and Everyman's Library, is making a tour of Canada and will go as far west as Vancouver. During his stay in Toronto, Mr. Dent and wife were the guests of Henry Button, Canadian manager of the firm. Mr. Dent gave an address before a largely attended meeting of the Toronto Press Club.

Oswald A. Porritt, who has recently resigned as manager of Price Bros. & Co., Ltd., spent last week visiting Toronto and Montreal, with a view to discussing a number of new mill propositions; among others the Rudd Paper Box Co's board mill for Toronto. Mr. Porritt states that he has decided not to enter into partnership in this new concern. He is also investigating some more propositions in other parts of Canada. The Engilsh bondholders of the Ocean Falls Co., Limited, of Ocean Falls, B.C., have retained Mr. Porritt as an expert to investigate their property and report on the advisability of reopening the mill. He will leave on May 29th for the West, accompanied by Mrs. Porritt, and expects to spend a week making an elaborate report on the entire Ocean Falls proposition.

The improvements to the Toronto Paper Co. of Cornwall are nearing completion. The company, as was previously announced, recently increased the dividend from 5 per cent. to 8 per cent. These enlargements have been going on for some time, and are now nearly finished. The sulphite mill will have a double capacity by July 1st, which will provide a small surplus for sale. The company will also bleach its own pulp, and will not in future have to buy bleached sulphite. New water wheels have been installed and the power which the firm takes from the St. Lawrence is very much increased. Mr. Garnett P. Grant, President of the Dominion Bond Co., is also president of the Toronto Paper Co., and has been instrumental in booming the financial end of the business.

About five hundred rangers from the Department of Lands, Forests and Mines, have gone from Toronto and other points to their respective stations in northern Ontario for the summer. The Department has followed the course carried out last year in engaging only those who had experience in bush work, and are familiar with the conditions of the districts in which they will serve for the next few months. While a number of students are in the service, selection has been made as far as possible from those who have demonstrated their capacity. An important innovation this season in safeguarding the forest areas of Ontario against damage by fire is the appointment of several inspectors to see that railway locomotives are properly equipped with spark arrestors. Under a recent order of the Dominion Railway Board, the railways are made responsible for fires that occur in the forests along rights of way, and to carry out this order the inspectors will see that all

Owing to the removal of the duty of twenty per cent. on typesetting and typecasting machines by the Federal Government, it is estimated by J. R. Bone, of Toronto, president of the Canadian Press Association, that Canadian publishers will save between $60,000 and $75,000 a year on machines coming into Canada, and no injury will be done to any Canadian industry, because no machines are manufactured in the Dominion. The removal of duties from photographs for newspapers, while not a large matter financially, will prove a benefit in preventing delays in the customs of pictures coming from England and other countries. Hitherto only pictures for Sunday school papers were admitted free, others being subject to a duty of twenty per cent.

APPEAL OF FAVORED NATIONS DECISION.

(Special to the Pulp and Paper Magazine.)

Washington, D.C., May 27, 1913.

President Wilson and his Cabinet, it is expected, will probably be asked to consider the advisability of appealing to the Supreme Court from the decision of the Customs Court in the Canadian wood pulp case. In this decision the Customs Court held that inasmuch as Section 2 of the Reciprocity Act grants free importation of print paper and wood pulp from that country, and a similar favor is granted to other nations with which the United States has signed favored nation trade agreements.

The question at issue is whether there exists any appeal from a decision of the Customs Court. The Treasury Department has held in the past that the Court is the court of last resort in customs cases; but it is said that the present cases involve treaty rights and it is believed upon that ground the Supreme Court will grant a writ commanding the Customs Court to certify upon it the record in the cases.

The Customs Court held the favored nation treaties to be a law of the land—therefore binding.

Treasury officials have been giving careful consideration to the decision handed down by the Customs Court and the matter has been referred to Secretary McAdoo, who, it is understood is ready to take the problem to the Cabinet for instructions.

It is the consensus of opinion, however, that the Government will not appeal the case and that a prompt settlement will be forthcoming. There is still, though, a doubt as to whether the Treasury Department will yield to this one decision or will institute further test cases before refunding the duties that have been collected since July 26, 1911. Comstock and Washburn, of New York, attorneys for the importers, have been in this city pretty much the past week consulting with the Treasury Department, but so far nothing official as to what the Government's intentions are have been made. —Meb.

CHEMICAL PULP CLAUSE.

(Special to the Pulp and Paper Magazine.)

Montreal, May 30, 1913.

From sources close to Sir Lomer Gouin, it is said that when the latter was shown the discrimination clause in the United States tariff against chemical pulp men, he is said to have intimated that "if the Americans wanted more favorable treatment from the Province of Quebec in the matter of pulp wood, that they were taking the wrong way of securing it." "On the other hand, the province would be inclined to treat the United States better in the matter of wood, if this clause placing a $2 duty on chemical pulp were removed."

Canadian pulp and paper men are following with the closest possible interest the tariff discussions in the United States, especially in the clauses relating to pulp and paper. It is uncertain whether the decision of the United States Customs Department will be appealed or not. The American Government usually leave the decision of the Customs Court of Appeal as final, but in this case there is a matter of some $3,000,000 duty involved, and it is felt here that the matter will likely be carried to the Supreme Court.—

Mr. Dubuc, head of the Chicoutimi Pulp Company Ltd., was in Montreal this week, and announced that their new 250-ton ground wood mill was in operation. This is the largest mill of its kind in the world. Mr. Dubuc recently returned from France.

Considerable interest is being taken here in the suit going on in New York over timber limits which are now in the possession of the Union Bag and Paper Company. Mr. H. M. Durant of Montreal is one of the defendants in the case. Mr. Durant was formerly connected with the Charlemagne Lumber Company. According to the despatch from New York, the following facts were brought to light during the process of the trial:

Durant and the plaintiffs, according to the testimony, entered into an arrangement some years ago to buy up timber limits in the La Rogue district in Canada, and ultimately bought the lands for $200,000. A stock company was formed and the arrangements made with two Canadian firms to handle the output. When the proposition did not pay, Durant, it was alleged, obtained power of attorney and sold out to the Union Bag and Paper Company. It was charged in court that Durant entered into a conspiracy with the Sheldon Company, whereby he obtained a commission on the deal unknown to the plaintiffs.

CANADIAN FORESTRY ASSOCIATION.

This year the Canadian Forestry Association will hold its convention in Winnipeg, July 7th, 8th and 9th. As the primary object of this organization is to get all the lands in the Dominion examined as soon as possible that they may be devoted to agriculture or to forest growth as they are found to be best fitted for one or the other, all classes of the community can join heartily the lands in the Dominion examined as soon as posible in the support of its work. This is particularly the case with those who have a direct interest in the products of the forest, as the danger is that more lands will be stripped of their timber than can be ever used for agriculture. To allow honest but ignorant settlers to locate on lands that are fit for nothing but forests is to condemn them to a life of slavish penury; while on the other hand to permit 'fake settlers' to take off good good timber under the guise of settlement is to permit a crime to be committed against both the community and the limit holder. These are some of the subjects that will be discussed along with fire protection, the growing of shelter belts, woodlots, etc., and the effect of forest cover on agriculture and stream flow.

Among the subjects to be discused by the experts who will attend will be farmers' plantations and their possibilities; the advisability of planting up with trees the large areas of sand lands in different parts of the Western Provinces; the handling of the prairie forest reserves so as to secure the best results in every way for the surrounding community. The older provinces have now had considerable experience with forest reserves and sand lands, and a lot of valuable information will be given to the Convention. Besides this the whole question of the handling of our forests in the timbered provinces so as to produce the best results will come under review, and, of course, the great question of protection from fire will be thoroughly threshed out. The Convention is open to all interested in tree growing.

Canada still exports over half the pulp wood produced in the country. In fact, the proportion of wood exported in the raw state increased from 55.6 per cent. in 1911 to 56.1 per cent. in 1912.

OBITUARY.

FRIEDRICH VON VOITH, OF HEIDENHEIM, GERMANY.

A cable message received by F. H. Storrer, C.E. manager of J.M. Voith Co., Inc., New York, on Saturday, May 17, conveyed the sad intelligence of the death in Heidenheim, Germany, on Friday, May 16, of Geheimer Kommerzienrat Dr. Ing. Friederick von Voith, the senior partner of the firm, J. M. Voith, Engineering Works, Heidenheim, Germany, and one of the directors of the J. M. Voith Company, Inc., New York.

The deceased entered his father's firm in Germany in 1864 and had seen the business grow from a concern employing 35 workmen to its present colossal proportions with a payroll of 2,100 in the Heidenheim works and 750 in the Austrian plant at St. Poelten.

Recognized as one of the foremost of the great German "captains of industry," his sudden death will prove a heavy loss to the firm which he had built up and developed during half a century.

He is survived by two daughters and three sons.

CANADIAN PRESS ASSOCIATION.

The annual meeting of the Canadian Press Association will be held in Toronto, June 3rd and 4th at the King Edward Hotel. All the various sections will be represented and the prospectus of the association shows that the newspaper situation will thoroughly gone into.

During the meetings in Toronto the ladies of the party will be entertained by the City of Toronto to automobile trips, and a sail on Lake Ontario when they will be the guests of the Royal Canadian Yacht Club.

One of the most prominent discussions will be that on the relations between newspapers and between newspapers and political parties by Sir John S. Willison, Editor of the Toronto News.

On the evening of June 4th a party of 200 will make an excursion to Northern Ontario through the new mining district. They will be the guests of Hollinger and Dome Mines; will visit the Porcupine district, stopping at Temagami and returning to Toronto on June 7th.

GREEN BAY BARKER CO. ACQUIRES MR. TIDMARSH.

H. E. Tidmarsh, who has been president and general manager of the Friction Pulley and Machine Works at Hudson Falls, N.Y., one of the well known grinder machine concerns in United States has gone to that city to take charge of the business for the Green Bay Barker Company. This company has for several years manufactured the Roberts and Libert barker, acknowledged to be in a class by itself as a pulpwood barker.

The Green Bay Barker Company, since Mr. Tidmarsh has joined it, will manufacture everything needed to equip a wood room in a pulp mill at its factory in Canada. The Canadian plant has not been started, but machinery is being assembled now for it and operations will be started in a short time. The officers are confident they will be able to turn out grinders and other wood room machinery that will prove as satisfactory to the manufacturers as the barkers have been.

Jas. L. Chambers of Chambers Limited, sailed on the 17th for England. Mr. Chambers has been very successful in putting through a number of paper mill deals, having supplied the machines for a number of the largest mills in Canada.

LAURENTIDE'S NEW TRAFFIC MANAGER.

Mr. Arthur D. Huff, the recently appointed traffic manager for Laurentide, Limited, will have his head office in Montreal in the Canada Life Building, where he is associated with Mr. Acer. Mr. Huff comes to Laurentide with a very wide business experience in traffic matters with the Grand Trunk Railway System. He was born at Chatham, Ont., but lived during his youth at Bay City, Mich. In 1886 he started with the Grand Trunk at London, Ont., as freight clerk; from 1893 to 1896 he was city freight agent; 1896 to 1901 travelling freight agent, Hamilton, Ont.; 1901 to 1903 chief clerk division freight office, Detroit, Mich.; 1903 to 1908, commercial agent at Pittsburgh; 1908 to 1913 division freight agent at Ottawa, Ont. Mr. Huff is consequently an expert on traffic matters, and should prove a most valuable asset to Laurentide's organization.

MONTREAL HERALD AND WITNESS CHANGES.

Announcement has been made of the transfer of the controlling interest in the Montreal Herald to a well-known local financier believed to be D. Lorne McGibbon. J. S. Brierley is withdrawing and proposes taking a six months' holiday in Great Britain.

It is also reported that the financial men behind the Montreal Tramways have acquired the Daily Witness. The weekly edition of the latter paper and the other publications issued from the Witness office will remain the property of the Dougall family.

It is understood that C. Gordon-Smith, present managing editor of the Witness, and C. F. Crandall, of the Star, formerly of St. John and Halifax, will take charge of the Witness when it passes into the hands of the new owners.

SWEDISH SULPHITE AND SULPHATE PULP PRODUCTION.

The following data on the chemical pulp production of Sweden are taken from the report of the Norwegian consul at Sundsvall, Sweden, which appeared in the Norwegian consular reports of April 5, 1913.

	Production in short tons.		
Year.	Total.	Sulphite.	Sulphate
1911	801,381	653,671	147,710
1912	886,258	734,139	152,119
1913*	911,611	755,083	156,528
1914*	953,500	788,153	165,347

*Estimated.

At the annual meeting of the Toronto Paper Manufacturing Co., held on May 21, the business was largely of a formal character. The annual statement showed net profits during the past seven months of $80,973, or at the rate of almost $140,000 per annum. All the old directors were re-elected, except Richard Brown, who has been on the Board for many years and retired owing to his advancing years, as he is now 79. His place is taken by his son, T. Albert Brown, of Brown Bros. The officers are: President, G. P. Grant; Vice-President, T. H. Watson; Directors, Rev. Dr. Briggs, R. S. Waldie, T. Albert Brown, R. A. Lyon, and R. J. Ward; Secretary, A. W. Briggs. The company, in addition to the other improvements to the plant, which have already been referred to, are putting in a loft in the mills at Cornwall and in the near future will turn out high grade loft-dried writing papers.

NORWAY AND DENMARK.

Report of Mr. C. E. Sontum, Commercial Agent.

Paper and Wood Pulp.

Stocks of mechanical wood pulp are small in Norway, and foreign buyers are reported to be taking out on running contracts. The north of Sweden mills have smaller stocks for f.o.w. shipment than they would otherwise have had because the shipping season was prolonged in the winter about two months longer than usually is the case. There ought, therefore, to be a possibility of a hardening of the market in the coming months, as the prices which are still current do not leave a margin of profit for the Norwegian mills.

Sulphate cellulose is, if anything, harder, but although there are more inquiries, there will probably not be much business done before the United States tariff question shall have been settled.

Newspaper articles have frequently of late referred to the present high prices on cellulose, but nothing is mentioned about the fact that about 75 per cent. of the production is sold in advance at everything but good prices. The factories must also count upon the very high prices of coal at present. During 1912 the wages were further considerably increased, and as far as the lumber prices are concerned, most of the mills must figure upon having to pay from 10 to 20 per cent. higher prices than before.

In Sweden, 82 per cent. of the production for 1913 is said to have been sold and 35 per cent. of the production of 1914.

The total production of cellulose in Sweden has been:

			Calculated for	
	1911. Tons.	1912. Tons.	1913. Tons.	1914. Tons.
Sulphite	593,000	666,000	685,000	715,000
Sulphite	134,000	138,000	142,000	150,000
Total	727,000	804,000	827,000	865,000

April Quotations for Wood Pulp.

Mechanical, moist white	$8.67 to	$9.33
Mechanical, dry white	20.00	21.07
Sulphite,1me light bleached	41.33	42.67
Sulphite, 1me strong	38.67	40.00
Sulphate, light bleached, ordinary	36.00	37.33
Sulphate, strong	36.00	38.67

All per ton nett, f.o.b. Swedish ports.

Utilizing Sulphate-Lye as Burning Material.

An engineer, Mr. R. W. Strehlenert, at Nol, has succeeded after experiments in inventing an improved method for utilizing the lye from sulphite manufacturing. From the lye is made an article, "Lignin," with a very high burning-value. It is calculated that if the method was employed by all of the cellulose mills of Sweden, there would be produced 420,000 tons of fuel per year to a value of nearly $2,000,000, from which could be derived 70,000,000 litres or more than 15,000,000 gallons of 50 per cent. spirits valued at even more than the fuel.

George A. Howell, of the Howell Co., Toronto, has returned from an extended trip to various points in New York, Massachusetts, and Pennsylvania. He reports that there is stronger demand for ground wood owing to the low water in many centres across the border, and that the rag and paper stock trade in the centres which he visited is rather quiet.

LAURENTIDE DEPRESSION.

Laurentide's decline is ascribed to revive rumors of an impending stock issue of $3,000,000, perhaps more, giving another example of the bearish interpretation placed on demands for new capital. As the issue will probably be made at par, the attractiveness of subscription rights when the raising of new capital was first discussed last summer was sufficient to carry the price up to 240. Now the market shivers, or is supposed to shiver, at the thought of where the money is to come from. Probably the bearish effect of new capital talk is tending to exaggeration. The floating stock of Laurentide is relatively small, and shareholders should not be as averse to taking up subscription rights, when they are offered, as the market in its present depression imagines.

GERMAN PULP AND PAPER EXPORT.

German export statistics for the years 1911 and 1912 include the following results:

	1911. Tons.	1912. Tons.
Ground wood	5,771	6,903
Chemical pulp	165,908	175,746
Wrapping paper dyed in pulp	74,274	77,547
Printing paper	62,669	55,179
Colored and coated paper	18,174	17,674
Writing paper	16,042	16,146
Wall paper	13,078	12,622
Other articles	126,695	127,575
Total tons	482,611	490,392

The above statement is of interest, as a dissection of it shows that about three-fourths of the German pulp and paper exports are in seven leading classes, and only slightly increased for 1912 as compared with 1911.

NEW INCORPORATIONS.

A new corporation has just been organized at Toronto, Ont., to deal in pulp and paper stock. It is the A. D. Soup Company, capitalized at $40,000.

* * * *

The Labrador Pulp & Paper Company has started the construction of a large pulp mill at Hamilton Inlet that will have a yearly capacity of 90,000 tons. According to H. R. Reid, vice-president, it is the intention to build another mill at Sandwich Bay, with an annual capacity of 50,000 tons, as soon as the larger one is completed.

* * * *

The two separate Hearst corporations that have been publishing the New York American and the New York Evening Journal, have been incorporated in Albany under one name—the Star Company of New York. The capital is stated as $110,000 and the incorporators, William Randolph Hearst, Solomon S. Carvalho, Edward H. Clark, Arthur Brisbane, and Bradford Merrill, all of New York. The Star Company was originally a New Jersey corporation.

NEW PATENTS

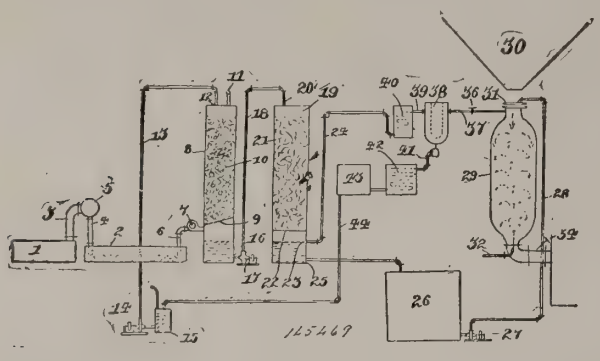
All patents are specially compiled for the PULP & PAPER MAGAZINE. Those of United States are by Davis & Davis, Patent Attorneys, Washington, D.C. Full particulars with drawings may be had by addressing the Commissioner of Patents, Washington, D.C., enclosing five cents per patent. Canadian patent particulars may be obtained from the Patent Office, Ottawa. In all cases give number of patent. We also carry brief descriptions of important English, French and German patents

SULPHITE PULP RECLAIMING SYSTEM.

Canadian Patent 145,469.

A reclaiming system for sulphite processes has been patented at Ottawa by Mr. C. B. Thorne, the manager of the Riordon Pulp and Paper Plant at Hawkesbury. The main claims and description of this process are as follows:—

In a reclaiming system in the sulphite process, with means of generating sulphurous gases and treating



these gases to form a solution; promoting the onward flow of this solution by means of promoting the flow of the returned gases to meet the onward flow of this solution. It also provides a means for drawing off the resultant solution. In this patent the speed of the onward flow is retarded, the returned gases accumulating to meet this delayed solution. The various chambers with the broken material are connected up as shown in the patent, which also provides a storage tank. In the means of generating and cooling the sulphurous gases the connections towards the lower end, as shown, have an inlet for with a quantity of limestone supported above the gas inlet in this receptacle. The water tank and a pump connecting the water tank to the upper end of the limestone tower; the second limestone tower having gas inlet towards the bottom and a quantity of substantially non-absorbent material supported within above this gas inlet. A digester and means for carrying the accumulated gases from the digester to the gas inlet.

There is coupled between the digester and the gas inlet a separator with a cooler connected to a portion of this separator and connected to the water chest and pumping system. A fan pump drives the gases to the towers, which has a grating above the gas inlet. The solution collects at the bottom of the tower, where there is a pipe which forms an outlet connected to a pump which pumps this solution to the top of the second tower. The second digester has a steam pipe connected in the lower end. A gas exhaust pipe extending from the upper end of a separator connected to this exhaust pipe. An intermediate cooler is introduced into the latter pipe and connected with the lower end of the separator.

This process is a combination with the digester and provides a means for making sulphurous acid by utilizing the gases and condensed steam exhausted from the digester in strengthening the acid produced as mentioned. It provides a means of returning the exhaust acids from the digester to the acid and returning the weak acid resulting through the condensed steam to this acid during the process of manufacturing.

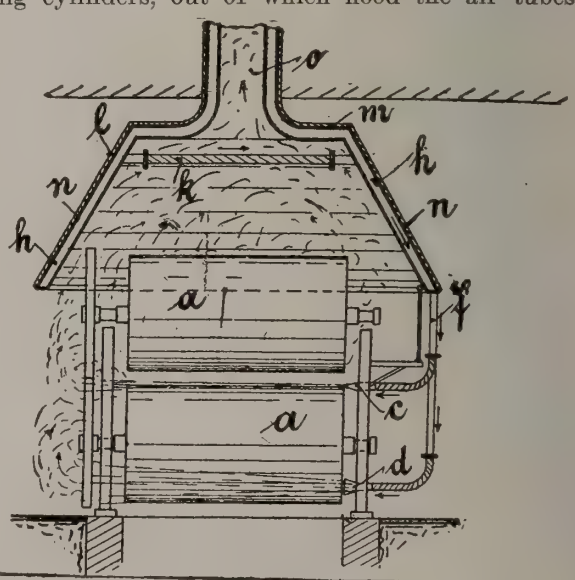
DRYING OF PAPER.

German Patent No. 257,439.

1. A contrivance for the carrying out of the procedure in patent 252,325 is herein characterized that the air tubes (c and d) are supplied from the hollow chamber of the discharge hood (h) above the drying apparatus.

2. A contrivance according to patent I is herein characterized that pipes (k) are built in the hood (h), which lead into the hollow chamber from both sides of the hood (h).

The contrivance for the carrying out of the procedure according to patent 252,325 shall hereby be an improvement; that a double-walled draft-hood is built over the drying cylinders, out of which hood the air tubes re-



ceive their air supply. This draft-hood serves the warm air from the cylinders better than the winding tubes above drying parts as described in original patent; and also surrounds the rising vapors with warm walls so as to prevent sweating.

The diagram shows part of the drying cylinder with front and side views of new draft-hood.

Over the drying cylinder (a) the hood (h) is so built as to lead off the vapors from the material being dried. This hood differs from others in that it has the double wall. The hollow chamber is consequently provided with tube (i) leading warm air into it, and the outlet (f) is for the air tubes (c) and (d).

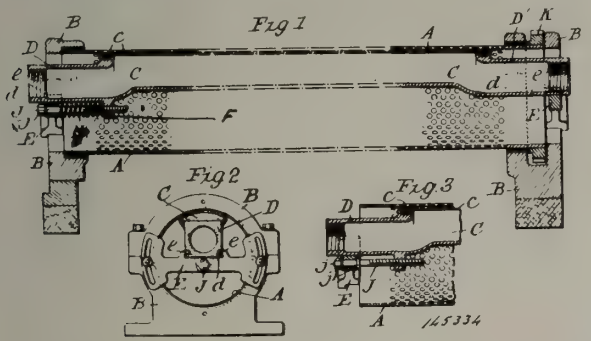
That the warm air in the chamber of the hood (h) might be better distributed, and that the heat thrown off by the cylinders might be better utilized to warm the air blast a row of pipes (k) are placed in the upper part of the hood (h) which opening out on both sides of the hood (h) flow into the chamber. The pipes (k) are quite flexible so as to conform to the shape of the hood (h), more rows of such pipes may be inserted if necessary.

That as little heat might be lost as possible a layer of some non-conducting material (e) covers the outside of the hood (h). The covering (m) of the hood (h) (runs with the arch of the machine); the side walls (n) are steep on the inside so that the vapors and air can easily escape through the chimney (o) which projects out through the roof.

SUCTION ROLL.

Canadian patent No. 145,334, Sandusky Foundry & Machine Co., Assignee of Wm. H. Milspaugh, Sandusky, Ohio, patentee.

This comprises additional patents on the original Milspaugh Suction Roll, being a combination of the cylinder with the suction box for effecting relative longitudinal adjustment between the box and cylinder by adjusting the pressure of contact of the box between the interior surface of the cylinder.



The suction roll is a tapered cylinder with a suction box therein, and open face correspondingly inclined, adapted to conduct with the interior surface of the cylinder there being provision for relative longitudinal adjustment for regulating the pressure.

Papermaking Machine.

John W. Kooken and John H. Reedy, of Hamilton, Ohio.

U. S. Patent No. 1,059,472.

This invention pertains to improvements in Fourdrinier paper making machines, the improvements being designed to avoid the formation, in damaging quantities, of foam at the head of the wire. It often happens in the working of the Fourdrinier machine, that large quantities of foam form on the apron and wire between the flow-box and the slice, this foam being detrimental to nice flow of properly conditioned pulp as the pulp reaches the first slice. We prevent this undesired formation of foam by delivering traveling sprays of water upon the pulp as it is moving between the flow-box and the first slice.

Papermaking Machine.

William E. Sheehan, of Albany, New York.

U. S. Patent No. 1,059,496.

This invention relates to paper making machines, and the object of the invention is to provide a means for drying a web of paper, pulp, or similar substance.

Machine for Treating Paper.

U. S. patent N. 1,062,108. Chas. W. Mears, Cleveland, Ohio, patentee.

Paper-Cutting Machine.

U. S. patent No. 1,062,427. A. Zannetti and J. Zannetti, San Francisco, Cal., patentee.

U. S. Patent No. 1,061,316, Treatment of Wood Pulp. B. T. Nase, San Francisco, Cal.

U. S. Patent No. 1,061,767. Wood Pulp Digester. J. C. W. Stanley, San Francisco, Cal.

U. S. Patent No. 1,061,768. Valve for Pulp Pumps. Thomas McQuat, La Chute, Quebec, Canada.

HIGH-SPEED PAPER MACHINES IN GERMANY.

During the last 20 years the speed at which we work our paper machines has rapidly increased. It requires special aptitude to tend a modern printing paper machine delivering 150 m. of paper per minute. In the first place the raw materials must be always of uniform quality; this is particularly the case with mechanical wood pulp, for in this case defects in the quality cannot be corrected in the edge runner or beater. Mechanical wood pulp which is too coarse, such as results from overmuch sharpening and from employing poor wood, should not be employed for high-speed paper machines. For producing 20,000 kg. of printing paper, one must provide 5 to 6 beaters of 300 kg. capacity. The beaters must be charged as thickly as possible. To facilitate charging the raw materials are best passed through edge-runners, pulpers or a shredder. These machines are best located above the beating room so that the disintegrated raw materials can fall direct into the beaters. The mixing vats should be as large as possible to avoid variations in the weight. Variations in the weight of the paper can also be easily occasioned by the foam rising on the sand-trap, and such must therefore be removed by means of shower-pipes or sprayers. Special attention must of course be given to the wire; especially when changing the wire must all parts of the wet portion of the machine be thoroughly inspected and kept in repair; it is preferable to devote an extra hour to this in order to ensure smooth and easy subsequent working. The top couch roll should have as large a diameter as possible and be adjustable. In the first wet-press only very permeable felts should be employed. When a good felt-washing system is installed, the first wet-felt should last until it becomes absolutely useless; if the felt does not run well, this is usually traceable to the press rolls,

which must be reground until the felt runs evenly. Reserve rolls are always best kept handy so that imperfectly working press-rolls can be quickly exchanged. The dryer must be of ample size, because by forced drying not only the paper but also the drying-felts suffer. Moreover felt-dryers must be adequately provided or else the felts are less tensioned in the middle, and the paper remains damper here than at the edges. The result is that the edges of the web of paper are tensioned more than the middle and consequently easily get torn. Where adequate felt-dryers are not provided it is preferable to use a paper drying-cylinder as a felt-dryer. If the web of paper is not absolutely uniform, soft places are formed when the paper is wound, and these places are badly cut by the blade of the longitudinal cutter, so that the roll presents an unsightly appearance. The manager of the mill and his workmen should always feel it incumbent on them to allow only faultlessly wound rolls to leave the factory.—Der Papier Fabrikant.

ORGANIZATION.

If manufacturers would consider these organization problems more seriously, they would be enabled to take advantage of the good, and, more important still, to reject the bad; for so long as the bad is not rejected, organization work generally has a bad name. Manufacturers grow tired of it—naturally; and thus the good organization work suffers, and it ought not to do so.

There are so many things that manufacturers can do collectively and co-operatively that would be either impossible or too expensive for the individual! You, old friend, must hear with amazement, as you do hear once in a while, of the specific case where an organization literally did a manufacturer $150,000 worth of good, and the paltry $30 of annual dues was all that the company was asked for in return, when, as a matter of fact, if it had boosted the organization which had accomplished this immeasurably valuable service, other members, perhaps ten, or fifty, other members, might have been brought in, and this would have been a good, strong thing for the manufacturer in question, for additions to the membership of a necessary and efficient and strong organization amount not merely to a relative but to a progressive increase in the strength of the organization itself.

Who, too, has not heard of the manufacturer with a plant a mile from anywhere, out on the dump somewhere, making good goods and good money into the bargain, who does not tell you, point blank, that the work that you are doing, if it is the patriotic work of an unpaid and unpayable organization officer, is good and that probably you will collect enough money for the purpose anyway, and the service will be performed, and the benefit will be widespread; and the tight-wad, out on the dump there, will get his full share of it and (unfortunately) more, because he doesn't deserve any share of it.

There are planty of cases like this. Unfortunately, they occur in cities where life is worth living industrially—because of the very work, no doubt, which an organization of public spirited and broad-minded men conduct and back with their money liberally. The manufacturer who won't help a good cause along, no matter how many thousands of dollars worth of benefit it has been to him, and no matter how sure it is to benefit him whether he pays any dues for it or not, unfortunately has a bad influence in the community, as of course he comes finally to afflict his fellow manufacturers with that tired feeling for which nobody cares. The damage that he does to the community, unfortunately, is never reciprocated by the community in the manner of the man himself. His reputation gives manufacturers generally a bad name, and in the customary perversities of public opinion there is nothing that they can do about it. He is the tight-wad who, in the treatment of his employees, usually makes it so much harder for his fellow manufacturers to have any credit for treating their employees fairly or liberally. Sometimes, indeed, the conditions of employment and work in vogue in his establishment bring on an industrial controversy which his injured and angered close neighbors who alone can quiet it down; and here again they are the men who quiet it down quite as much for the benefit of the tight-wad as of themselves. They have an organization. They have an organization because they give their money for the support of one.—"How," New York.

HOW MUST ROTARY NEWSPAPER BE MANUFACTURED THAT IT MAY BE READILY WOUND ON THE REELING MACHINE?

A fundamental condition is that the paper is of the same thickness throughout the entire width of the web. It is therefore of the greatest importance that the gates be kept under observation. It is also important that the pressure given to the paper by the calenders is exactly equal over the whole width of the web. When for example a small width has been worked on the paper machine for some time, and then this width is suddenly increased, the rolls of the calenders often become worn in the middle and the edges of the paper thus obtain increased pressure and become thinner than the middle of the web. The paper roll consequently becomes hard in the middle and the paper tears; as soon as the least fault occurs the edges of the roll, however, remain soft, the knife will not cut, and under some circumstances even folds may form.

Moreover the dry felts have a great influence on the smoothness of the paper, and it is therefore inadvisable when manufacturing rotary newspaper and wall paper, to utilize the dry felts up to their limit of use. The dry felts first lose their elasticity in the middle, especially when the dryers are too small or insufficiently heated, the edges of the web are then pressed with increased pressure against the cylinders and dry more quickly than the middle, and the dry edges remain rougher in the calenders than the moist central portion. The soft places in the roll of paper can to some extent be compensated for by increasing the diameter of the loading roll by allowing a strip of paper to run thereon. When however such paper rolls of unequal hardness are printed on the rotary printing press, the web is readily drawn off askew and becomes torn. When calendered papers are wound off by rotary means it is desirable to instal the Bischoff reeling machine directly adjacent to the calender; it is thus possible to obtain perfectly uniform rolls of paper by applying pressure at the cylinder to one or the other side of the paper. In the Schloglmuhl paper mill, I have for 30 years used such an arrangement to wind mills of calendered printing paper up to 100 cm. diameter.—Der Papier Fabrikant.

TESTING THE POROSITY OF PAPERS.

In the Wochenblatt, Mr. W. Colditz discusses the question of the sizing of printing papers. Many printers and paperhangers are under the impression that the sizing of the paper directly influences its absorption of the printing ink, just as in the case of writing papers where a water-ink is employed. As a matter of fact the sizing has only a small and indirect influence on the printing qualities of the paper by the addition of a little colloidal matter which tends to close the pores. The writer cites a case where the printer complained of a paper being too absorbent so that the next delivery was sized very much harder. Tested with writing ink this second paper proved quite hard sized, but none the less the same complaint as to its absorbency for printing ink came again from the printer.

What is really wanted for testing printing papers is some test by which the penetration of oil or varnish through the paper may be measured. A satisfactory test of this nature the writer has so far failed to find. It is, however, possible to test the printing qualities of a paper, at all events for all ordinary engine-sized papers, by determining the porosity of its structure. The greater the volume of the air spaces in the structure of the paper, the greater will be its absorbency for printing ink, and vice versa. A measure of this quality may be obtained by dividing the apparent specific gravity of the paper by its real specific gravity. The apparent specific gravity is easily calculated by ascertaining the volume and the weight of a convenient unit of the sample. The determination of the real specific gravity needs a little more preparation. This requires a glass sinker which has previously been weighed suspended from the arm of a chemical balance, once in air and subsequently totally immersed in water and again in olive oil. The sinker must be large enough to contain a weighted piece of the paper, which is placed therein and then steeped for at least half a day in the olive oil. The olive oil penetrates all the pores of the paper and gradually displaces all the air therefrom, for which a sufficient time must be allowed. The temperature both of the water and the oil must be the same at each time of weighing.

The following example illustrates the operations to be performed:—Weight of the paper in air, 0.1422 gramme; weight of empty sinker in air, 20.1392 grammes; weight of ditto in water, 12.334 grammes; weight of ditto in oil, 13.013 grammes; weight of sinker containing paper in oil, 13.060 grammes. Then the weight of oil displaced by the paper is 13.1552—13.060 =0.0952 gramme. The temperature of weighing was 23.7 degrees Centigrade, and the specific gravity of the oil at this temperature was

$$\frac{20.1392-13.013}{20.1392-12.334}=\frac{7.1262}{7.8052}=0.9130$$

which has to be reduced so as to be in comparison with water at 4 degrees C.: $0.9130\times0.9974=0.9107$. The real volume of the paper in cubic centimetres is then calculated as

$$\frac{0.0952}{0.9107}=0.1045$$ so that its real specific gravity is $$\frac{0.1422}{0.1045}=1.1361.$$ If the apparent specific gravity of the paper be divided by the real specific gravity, the lower the value so obtained the more porous and absorbent will be the paper towards printing ink.—World's Paper Trade Review.

FOREST FIRES.

The damage done to commercial stands of timber in North America is from $25,000,000 to $100,000,000 annually, according to experts who have made a study of the question. From 1880 to the present time, the annual loss is estimated to be $50,000,000. These figures do not include estimates of the losses sustained in the destruction of young growth and forest litter, in which lies the hope of future timber crops. The burning of the forest litter has the effect of making stream flow irregular, eroding river banks and destroying the fertility of land over which useless earth is deposited by swollen rivers.

Of recent years there has been a remarkable change in the attitude of the public toward these losses. Newspapers and magazines discuss questions of fire protection all the year through, rather than in the periods of danger exclusively. Governments are adopting advanced legislation, the number of fire rangers is constantly increasing and over 60 forest protective associations on the continent are actively engaged in efforts to reduce the fire loss.

THE DYEING OF PAPER.

The coloring of paper is to-day considerably simpler than in former times when the papermaker had often to make his own colors. Nowadays in doubtful cases he simply sends a sample to his color purveyor and obtains per return the particulars desired. When selecting raw materials it is essential that no old paper of a darker color than that desired be employed. The more coloring materials that must be mixed to obtain a desired coloration, the duller as a rule will the tone of the color be, and the more expensive the coloring; for very bright shades it is preferable to choose a color which can be employed with as little other admixtures as possible. With highly colored papers one need not be sparing with alum. When the right coloration has been obtained it is best to retain it during the complete manufacture; the coloring materials are therefore supplied to the second and third beater only when it is a question whether the first beater was rightly colored, because there is then always a margin for correction. For highly colored papers the beaterman should be allotted a reliable workman to weigh and dissolve the colors as otherwise it is likely that undissolved color will be present in the paper or remain in the color sieve. Many colors e.g. auramin have their shades affected by hot water. Each color must be dissolved by itself and be added to the beater. Unreadily soluble coloring materials, e.g., fuchsin are dissolved in larger quantities and added to the beater by the litre. With all colored papers it is desirable to add the major portion of the color to the beater directly when charging it, because then all the fibrous materials become uniformly colored. If a coloring material dissolved in hot water be mixed with the pulp, the fibres in the paper which first contacted with the hot coloring material would appear more darkly colored. In many cases it is preferable to add the major portion of the coloring materials to the edge-runner, especially when one desires to make sure that wood-splinters will also be colored. With the cheaper qualities of paper it is in many cases better to employ earth colors instead of kaolin and aniline colors, and to color with aniline colors afterwards.—Der Papier Fabrikant.



MONTREAL MARKETS.

Prices for all lines of pulp and paper keep up remarkably well with the possible exception of groundwood. News shows no change, but the prices are holding their former levels. Sulphite is also the same as heretofore. The prices for ground wood still remain low, but there are many indications that there will be an advance before long. There has been no rain for about six weeks, and the country is getting very dry and water is becoming scarce. This means that the production is decreasing and stocks will soon be exhausted. When this takes place, there is no doubt but that the prices for ground wood will improve. The prices for Montreal follows:—

Paper.

News, $41 to $43, delivered in United States.
News, $41 to $43 for large orders, $44 to $45 for small orders.
Newsprint, sheet, $45 to $50 at mill.
Book papers, carload lots, No. 3, 4⅛c. to 4½c.
Book papers, broken lots, No. 3, 4¼c. to 4¾c.
Carload lots, No. 2, 4¾c.
Manila B., 3¼c. to 3½c.
Broken lots, No. 2, 5c. to 5½c.
Carload lots, No. 1, 5¼c. to 6¼c.
Broken lots, No. 1, 6¼c. to 6¾c.

Wrappings.

Fibre, 4c to 4¼c.
No. 2 manila, 3¾c. to 4c.
No. 1 manila,, 3½s. to 4½.
Kraft, 4c. to 4¾c.

Paper Stock.

No. 1 hard shavings, $1.80 to $1.85.
No. 1 soft white shavings, $1.60 to $1.75.
No. 2 soft white shavings, $1.15.
Mixed shavings, 50c. to 55c.
White blanks, 85c. to 90c.
Ledger, $1.15 to $1.25.
No. 1 book stock, 90c.
No. 2 book stock, 45c. to 55c.
Manila envelope cuttings, $1.05 to $1.10.
White envelope cuttings, $1.75.
No. 1 print manilas, 55c. to 60c.
Folded news, 55c. to 60c.
Crushed news, 45c. to 50c.

Paper.

Good mixed paper, 40c. to 43c.
Old white cotton, $2.50 to $2.75.
Mixed cottons, $1.60 to $1.75.
Light cottons, $1.75.
No. 1 white shirt cuttings, $5.50 to $5.75.
Light print cuttings, $4.00 to $4.50.
Fancy shirt cuttings, $2.10 to $2.50.
Blue overall cuttings, $3.45 to $3.55.
Brown overall cuttings, $2.25 to $2.50.
Black overall cuttings, $1.55 to $1.70.
Linings, $1.50 to $1.75.
New unbleached cotton, $4.60 to $5.00.
Bleached and unbleached cotton, $4.50 to $5.00.
Bleached and unbleached shoe clips, $4.00 to $4.50.
New light flannelettes, $3.75 to $4.25.
Block satinets roofing stock, 95c. to $1.00.

TORONTO MARKETS.

The newsprint market, both local and foreign, continues good and prices are firm. Book and writing mills all continue busy, although orders have shown a slight falling off during the past fortnight, owing to some of the printing establishments being quiet. Paper houses report a good average trade for the past month and the outlook for an active summer business is considered excellent. The cutting on the cheaper grades of wrapping and kraft, especially in large quantities, continues, but the paper bag situation has improved. There is still, however, some slashing of discounts. The demand for ground wood pulp is active and several inquiries are being received, some fair sized orders having been accepted during the past few days. Sulphite is yet strong and scarce and there are no stocks on hand. The rag and paper stock market is only fair. Mixed papers are away off, but flock and ordinary satinettes are in strong demand with the price stiffening all the while. The first five months of the present year will show an increase in number of orders and volume of business over the corresponding period of last year, with both the mills and the paper houses, and, on the whole, business conditions are well maintained in the pulp and paper line considering the tightness of the paper money market.

Quotations, f.o.b. Toronto, are:

Paper.

News (rolls) $43 to $45, according to quantity.
News (sheet) $50 to $60, according to quantity.
Book papers (carload) No. 3, $4 to $4.35.
Book paper (broken lots) No. 3, 4c to 4½c.
Book paper (broken lots) No. 2, 4½c.
Book papers (broken lots) No. 2, 4½c to 5¼c.
Book papers (carload) No. 1, 5c to 6c.
Book papers (broken lots) No. 1, 5¼c to 6½c.
Writings 4½c. to 7½c.
Sulphite Bond, 6½c. to 8½c.
Fibre, $3.35 to $3.75.
Manila B., $2.50 to $3.25.
Manila No. 2, $2.75 to $3.50.
Manila No. 1, $3.35 to $3.75.
Kraft, 4c to 5c.

Pulp.

Ground wood (at mill), $15 to $16.50.
Ground wood, $22 to $24.50, delivered in United States.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $46 to $47, delivered in United States.
Sulphite (bleached), $58 to $60, delivered in Canada.
Sulphite (bleached), $60 to $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.65.
No. 1 Mixed Shavings, 60c.
White blanks, $1.10.
Ordinary Ledger Stock, $1.20.

Heavy Ledger Stock, $1.50.
No. 1 book stock, 87½c.
No. 2 book stock, 55c.
No. 1 manila envelope cuttings, $1.25.
No. 1 print manilas, 70c.
Folded news, 47½c.
Over issues, 55c.
No. 1 clean mixed paper, 32½c to 35c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.50.
No. 1 white shirt cuttings, $5.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $5.00.
Ordinary satinets, 95c.
Floc. satinets, $1.00.

THE BRITISH MARKETS.

(Special to the Pulp and Paper Magazine.)

London, May 22, 1913.

Within the past two weeks the large printing concerns in London and the provinces have become suddenly busy on an extensive scale, and consequently the demand for the domestic supply of paper has considerably increased particularly in fine writings and printings of all grades. Added to this, paper makers are busy coping with the export trade, which has been very brisk since the beginning of the year, so that taking things on the whole, the British paper industry is in an active condition. That being so mill owners are holding out very strongly for increased prices and in numerous cases half a cent to a cent per pound has been obtained. Efforts are also being made to push up the prices of newsprint. A very great deal depends on the contract that is to be entered into and then the mill owners, or agents, cut their discounts according to the buyers they have to deal with. The majority of the newspapers are now paying a little extra for their paper and naturally this is causing some little alarm among the publishers. Good printings and writings are always on demand in the United Kingdom, but owing to the keen competition that prevails prices are most irregular. Makers of kraft and other papers also say they are being kept busy at the mills.

* * * *

The mechanical pulp market still lies somewhat dormant with prices hardening slightly. Prior to the Whitsuntide holidays not much business was doing and since they have passed the market has become more dull. Enquiries should be being made very soon—at least makers are expecting them weekly. Large shipments on contract continue to arrive at the ports and the improved activity in the paper mills should see the market early astir. Quotations in London are as follows:

Pine, 50 per cent. moist (prompt)	$10.20 to $10.50
Pine, dry (prompt delivery)	21.00 to 22.30

From 15 to 20 cents is charged extra for forward delivery.

* * * *

Sulphites and sulphate continue more firm and business scarce. Enquiries are reported in the market, but the state of things at present existing is not at all satisfactory either from a sellers or buyers point of view. When the Whitsun holiday feeling is over there might be a turn for the better and this is the hopeful feeling of makers in whose favour the market is at present. From Scandinavia comes the reports that the Balkan troubles and the American tariff question has killed business for the present, though prices are steadily rising. Heavy shipments have arrived in England quite recently and these and forward contracts are keeping the character of the market up in Norway and Sweden. Prices in London are about as follows just now:

Bleached Sulphite	$55.30 to $60.00
"News" or strong quality sulphite	38.00 to 38.50
Unbleached Soda (first quality)	37.50 to 38.00
Unbleached Soda (strong)	37.00 to 37.50
Kraft, strong	37.00 to 37.50

* * * *

In the chemical markets new business is on the quiet side. Chemical manufacturers report that they are well booked ahead with running contracts. Soda ash is in steady request and caustic soda is moving off freely at $48 for 76 77 per cent. per ton. Bleaching powder is firmly held and available supplies are only moderate. Present quotations are $24.86 to $25.50 per ton (softwood casks) and $25 to $26 per ton (hardwood casks), according to the market. Soda crystals in 3 cwt. barrels, are $15.90 per ton.

* * * *

Straw pulps in England are very firm and the demand good. Esparto is dull and prices unchanged, little or no business passing. In the paper stock trade rags of all grades are in keen demand and prices are hardening owing to the shortage in the collections.

* * * *

In the mineral trade china clay still keeps at a high price and the demand exceeding the supply. Labor troubles are also threatened in the mines. The exports in April reached 78,962 tons, compared with 31,922 tons in March. The United States is pressing hard for deliveries just at the moment.

NEW YORK MARKETS.

(Special to the Pulp and Paper Magazine.)

New York, N.Y., May 27th, 1913.

There are very few, if any changes in the local ground wood market. Reports from the various sections of the country all say that water conditions are all that can be expected for this time of the year, and in consequence pulp consumers are running their own machines to their capacity. What move there is in ground wood is against old contracts. Makers of pulp for sale report a very quiet market—the only feature of interest being the keenness of competition for new business. Prices are very unsteady and subject to considerable shading of actual business.

Sulphite pulps, too, are quiet. Contract making seems to be at a standstill, but now that the Court of Customs Appeals has handed down its decision granting other countries the same privileges as accorded Canada in the recent Reciprocity pact, consumers are showing somewhat more interest in the market. The pending revision of the tariff, however, continues to reflect a state of uneasiness, as many sulphite pulp users are not anticipating their requirements as they do not know exactly how the new tariff will effect their business. Some few importers say that they have quite a few inquiries for 1914 and 1915 deliveries, but the volume of business now being transacted is chiefly against old orders. Prices on the various descriptions of pulps are given below.

Old waste papers are being fairly well maintained at the recent break. The demand is somewhat better than a month ago when commons and mixed went off. The break was due to curtailment of the many mills during the recent flood which was followed by strikes at several of the larger plants. Commons are still very quiet, but mixed papers are picking up. Hard and soft white shavings are in fair inquiry. Book and magazine stocks are moving in good volume, as also ledger stocks and manila cuttings. Collections are not over abundant, but sufficient stocks are coming in to meet the deman and there is no marked accumulations reported. Prices are firm at the recent advances.

Pulp.

Ground wood, No. 1, $16 per short ton, f.o.b. mill.
Ground wood, No. 2, $14 per short ton, f.o.b. mill.
Unbleached sulphite, domestic, 2.15c. to 2.30c. delivered.
Bleached sulphite, domestic, 3c. to 3.15c., delivered.
Unbleached sulphite, foreign, 2.05c. to 2.30c., ex dock, N.Y.
Bleached sulphite, foreign, 3c. to 3.25c., ex dock, N.Y.
Bleached sulphate, foreign, 2.60c. to 3c., ex dock, N.Y.
Unbleached sulphate, foreign, 1.90c. to 2.10c., ex dock, N.Y.
Soda pulp, bleached, domestic, 2.15c. to 2.3c., delivered.
Kraft pulp, foreign, 2c. to 2.20c., ex dock, N.Y.

Paper.

General trade conditions of the paper market are on the whole favorable, though it must be taken into consideration that consumers of this commodity are drawing only on their accounts as actually needed. The underlying situation is sound and once the disturbing influences incident to the pending tariff changes are eliminated, it is the consensus of opinion that trading will once again assume normal proportions. Domestic manufacturers, however, are rather dubious as regarding the outcome. It is the general belief that if the Underwood bill is passed the American paper industry will suffer intensely. The larger consumers of paper are only taking on such supplies as are actually needed at present, as in most cases they do not know just how much paper they will need if the bill passes. A canvass among the leading distributors and millmen during the past couple of days reveals the fact that newsprint paper is moving freely on contracts and considerable new business is being booked. Competition, however, is still very keen and prices in some cases have been shaded to obtain business. This is done chiefly, however, by the jobbers, who, in their greed for commissions, are not adverse to underquoting. Side run news is firm at the market prices, as also tissues and manilas. Fibre papers are showing an upward tendency—the mills appear to be pretty well filled with orders for some time to come and there is talk among them of an advance in the near future. Screenings are very active at present and prices are being well maintained. Jobbers are having more confidence in paper bags and the recent advances are not only being held up, but are reflecting an even stronger tone. Book papers are moving slowly on old orders, and the finer grades are passing in proportion to the requirements of the season. Prices during the interval are without material change and repeated as follows:

News, rolls, transient business, $2 to $2.20, f.o.b. mill.
News, rolls, contract renewals, $1.95 to $2.05, f.o.b. mill.
News, sheet, $2.15 to $2.25, f.o.b. mill.
Book papers, car lots, C. & S. C., $4 to $4.20, f.o.b. mill.
Book papers, car lots, M.F.S., $3.75 to $3.90 f.o.b. mill.
Writing paper superfine, 11c. to 13c., delivered east of the Mississippi River.
Writing paper, extra fine, 10½c., delivered east of the Mississippi River.
Writing paper, No. 1 fine, 9c., delivered east of the Mississippi River.
Writing paper, No. 2 fine, 8c., delivered east of the Mississippi River.
Writing paper, engine sized, 4½c. to 8c., delivered east of the Mississippi River.
Bond paper, 6c. to 24c., delivered east of Mississippi River.
Linen paper, 7c. to 18c., delivered east of Mississippi River.
Ledger paper, 8c. to 30c., delivered east of Mississippi River.
Manila, jute, 4¼c. to 5c., delivered.
Manila, wood, $2.40 to $2.80 delivered.
Kraft, No. 1, $3.65 to $4.02½, f.o.b. mill.
Kraft, No. 2, $3.27½ to 3.77½, f.o.b. mill.
Screenings, $1.75 to $2.12½, delivered.
Boxboards, news, $31 to $33 per ton, delivered.
Boxboards, chip, $30 to $32 per ton, delivered.
Boxboards, straw, $32 per ton, delivered.
Wood pulp board, $42.50 to $45 per ton, delivered.
Tissue, white, cylinder, 42½ to 45c., delivered.
Tissue, fourdrinier 45c. to 50c., delivered.
Tissue, jute manila, 50c. to 55c., delivered.

EUROPEAN CONDITIONS.

(Special to the Pulp and Paper Magazine.)

New York, N.Y., May 27, 1913.

A leading local pulp importer has just received the following letter from his correspondent in London:

Following certain ideas of the American Paper and Pulp Association, the British Paper Makers' Association, which meets for the annual dinner in London on the 29th has made some sort of attempt to compile data as to pulp prices, general conditions, stocks at mills, and sales. The figures so far as they go are of little value, as they are compiled chiefly from Government and Consular reports and returns mostly now out of date, and there is no information as to the percentage of pulp in sight or on order. Any efforts at making reliable returns of any use to papermakers have proved, so far, a fiasco, and valueless. On the other hand, the Swedish Cellulose Association has now realized the extreme usefulness of accurate data on output, enquiries, sales and percentages of output unsold, and a Swedish trade organ makes no secret of the fact that this organization has had the effect of closing up the ranks of the chemical pulp makers in Sweden and to a smaller extent in Norway, the effect being all in their favor, as it has prevented a recurrence of the bluffing which largely resulted in the taking of unprofitable contracts of three or four years ago. The Swedish pulp makers say they are "top dogs" at present, and see every indication that they will hold their own. Whenever there is any weakening of the sulphite market there are ready buyers both in England, Scotland, and on the Continent of Europe, but during April and May the contracts placed for next year and 1915 have been well up to present prices. The President of the Swedish Association said recently that makers were foolish to book orders at present figures, as everything indicated even better trade and more money for chemical pulp—except the lowest grades, which have fallen in sympathy with the slump in mechanical. A Gothenberg correspondent wrote me this week: "Our chemical pulp producers are sitting very tight, and this attitude is strengthened by genuine inquiries, particularly for sulphite, from America and England. The tendency at the moment is to ask higher prices, and the reason not much business is recorded is that several of the best mills are quoting figures for chemical pulp which buyers appear to consider unreasonably high." One British agent of repute stated recently that he had advised his mill that there is little chance of obtaining contracts for 1914-15 at the quotations he had to put forward, and the mill replied: "We will not take a penny less—we are content to 'wait and see.'"

Approximate quotations, c.i.f., Great Britain:

Sulphite Bleached	£11 10 0 to 12 15 0	$56.06 to $62.16	$50.16 to 55.94
Sulphite Easy Bleaching, 1st quality	9 5 0 to 9 12 6	45.09 to 46.92	40.59 to 41.93
Sulphite News or strong quality	8 15 0 to 8 0 0	42.66 to 43.88	38.10 to 39.19
Soda Unbleached, first	8 10 0 to 8 15 0	41.44 to 42.66	37.29 to 38.10
Soda Unbleached, strong	8 2 6 to 8 10 0	39.60 to 41.44	33.40 to 37.29
Soda kraft	8 2 6 to 8 10 0	39.60 to 41.44	35.40 to 37.29
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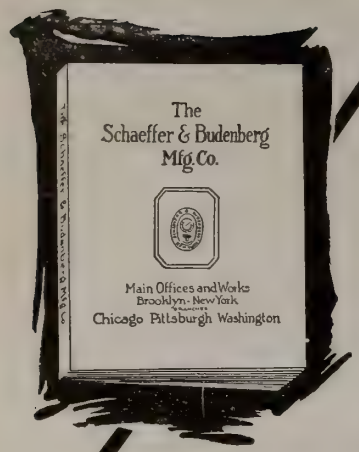
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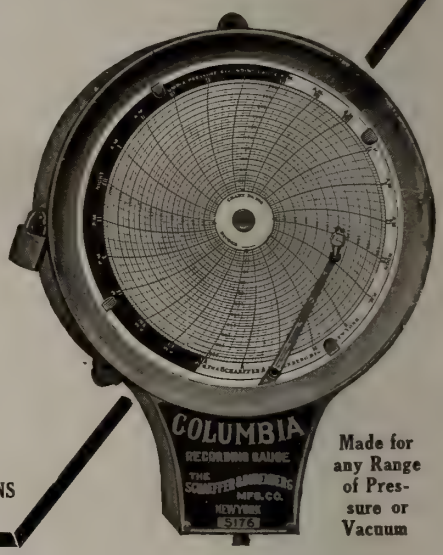
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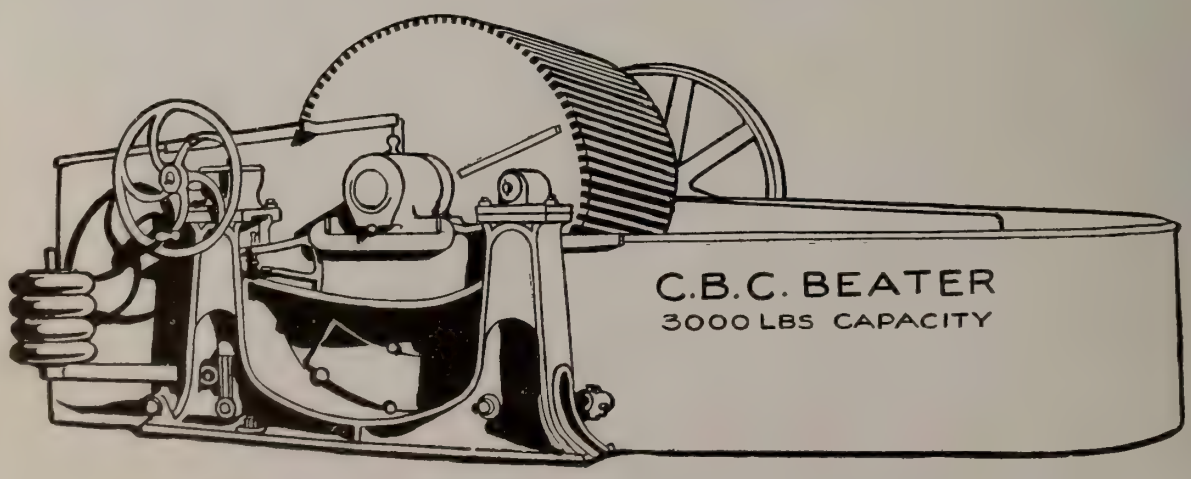
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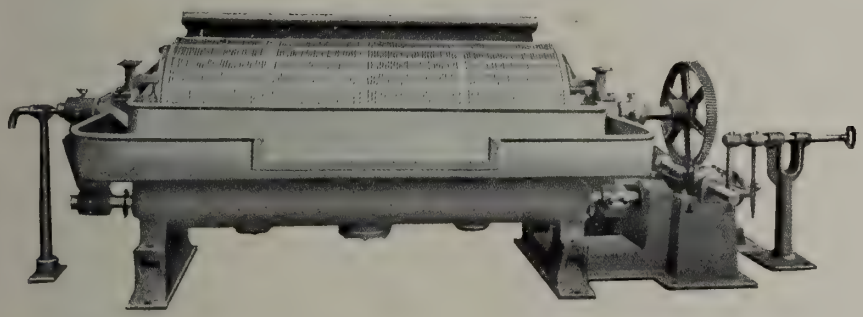
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Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters
Can. Boving Co., Toronto.

Digester Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms
Snell, Samuel, Co., Holyoke, Mass.

Dryers.
Canadian Boving Co., Ltd., Toronto, Ont.

Evaporators
Canadian Boving Co., Ltd., Toronto, Ont.
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.
Zaremba Co., Buffalo, N.Y.

Experimental Machinery—
Marshall, T. J. & Co., Ltd., London, Eng.

Exporters
Parsons Trading Co., New York, N.Y.

Felts
Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Carleton Place, Ont.
Bredt, F. & Co., New York, N.Y.
Dallyn, Jardine & Co., Toronto, Can.
Heimbach, Thos. Jos., Ltd., Duren, Germany.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Penmans, Ltd., St. Hyacinthe, Can.
Porritt, Joseph & Sons, Manchester Eng.
Spencer, J. H. & Sons, Bury, England.
Tippet Arthur P. & Co., Montreal, Can.

Fourdriniers Wires
(See Brass Wire Cloth.)

Gauges
Ashcroft Mfg. Co., New York, N.Y.
Schaeffer & Budenberg, Brooklyn, N.Y.

Generators and Transformers
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Siemens Co. of Canada, Ltd., Montreal, Can.

Grinders
Canadian Boving Co., Ltd., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

Heating
Sheldons, Ltd., Galt, Ont.

Jordan Engines.
Appleton Machine Co., Appleton, Wis.
Canadian Boving Co., Ltd., Toronto, Ont.
Jones, E. D. & Co., Pittsfield, Mass.
Process Engineers, Ltd., Montreal, Canada.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

Jute Cloth
Wardlaw, T. D., Toronto, Ont.

MILL SUPPLIES CONTINUED

Laying Machines
Chambers & Simpson, Toronto.
Collis & Sons, J., London, Eng.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Canadian Boving Co., Ltd., Toronto, Ont.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Canadian Boving Co., Ltd., Toronto, Ont.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Canadian Boving Co., Ltd., Toronto, Ont.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Canadian Boving Co., Ltd., Toronto, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Canadian Boving Co., Ltd., Toronto, Ont.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Canadian Boving Co., Ltd., Toronto, Ont.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines

Twines
Wardlaw, T. D., Toronto, Ont.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.

MILL SUPPLIES CONTINUED

Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines
Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste
Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—
Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., Montreal Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—
McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—
Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—
Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,
Deputy Minister.

Department of the Interior, Ottawa,
December 20th, 1912.

PAPER MILLS CONTINUED

Northumberland Paper & Electric Co., Campbellford, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Wrapping—
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Scotch Fibre", "Invictus Fibre", Hercules Manilla", St. Francis Manilla", "Wave Crest Drug."
Crabtree & Sons, Edwin, Crabtree Mills, Que.
Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Corrugated Paper—
Lazier Paper Mills, Ltd., Belleville.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
Ontario & Minnesota Power Co., Fort Frances, Ont.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
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Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont .
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Montreal Paper Co., St. Bazile, Que.
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Riordan Pulp and Paper Co., Ltd., Montreal, Que.
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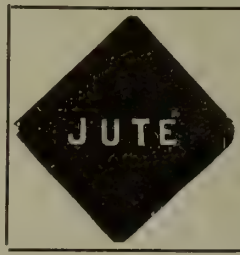
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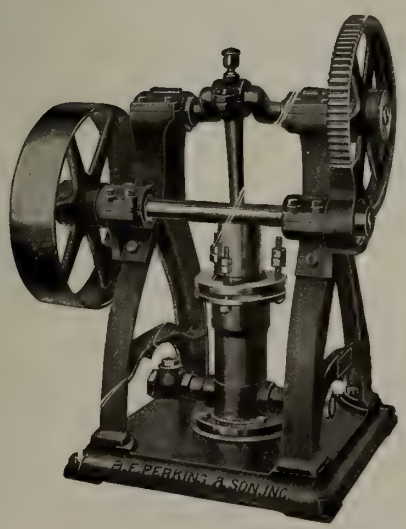
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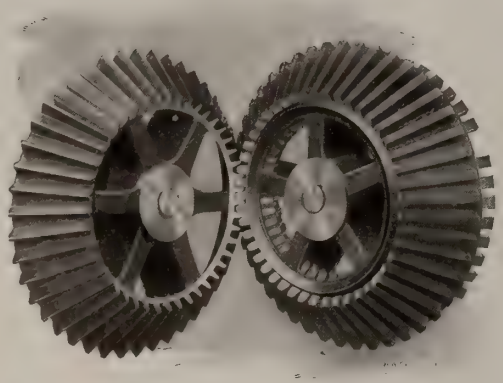
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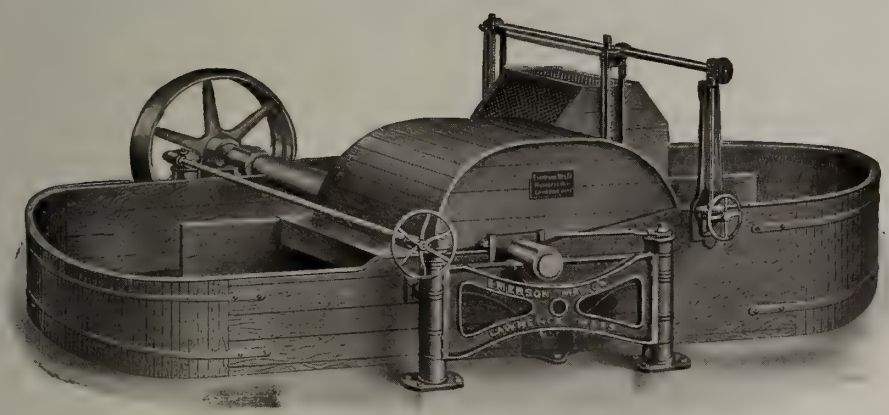
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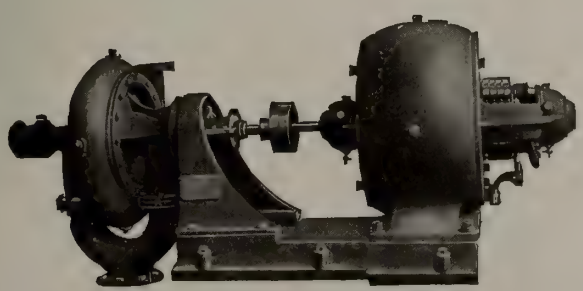
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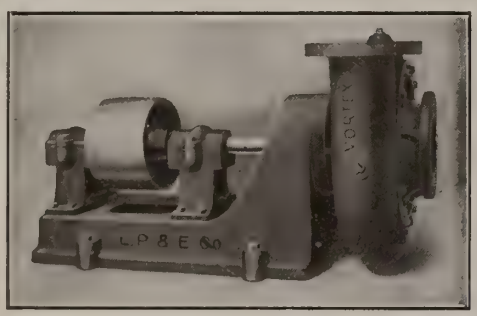
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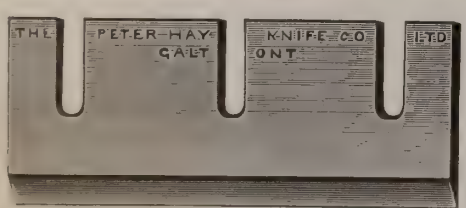
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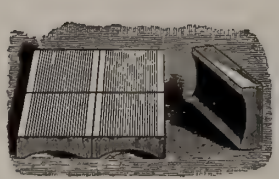
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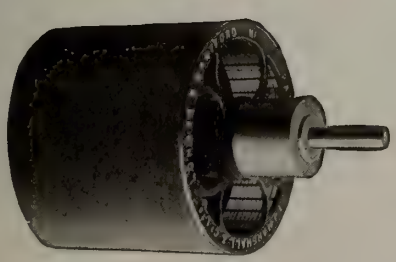
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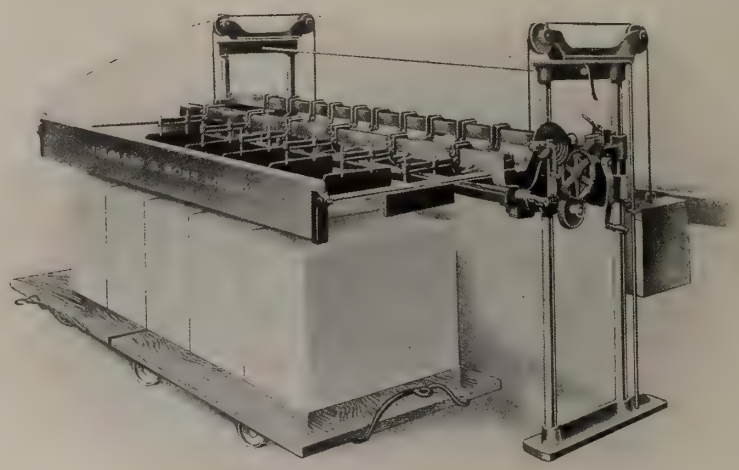
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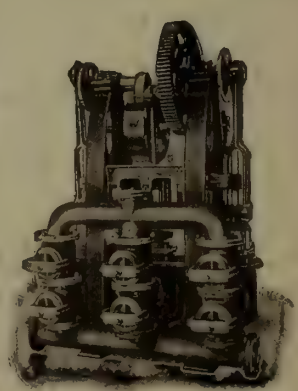
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VOL. XI. TORONTO, JUNE 15, 1913 No. 12

PULP AND PAPER MAGAZINE OF CANADA

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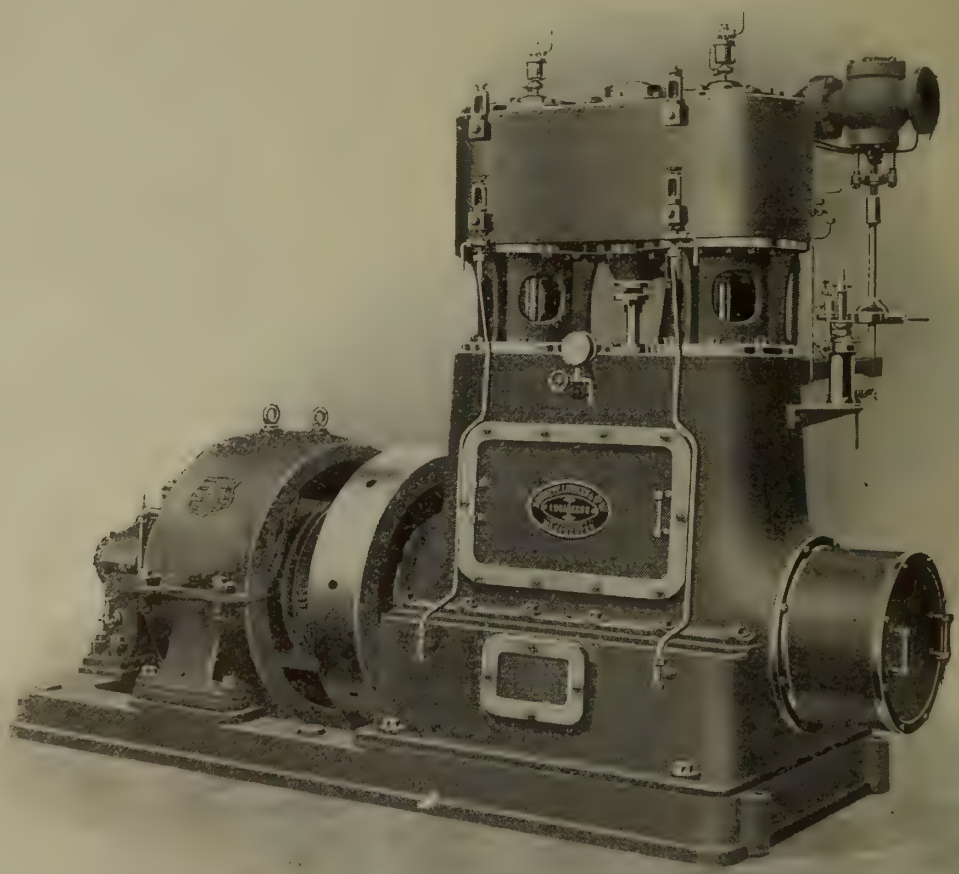
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These engines are simple in construction and all parts are easily accessible. Owing to the efficient system of lubrication and perfect balance of the moving parts the engines run silently and steadily under all conditions of load. They are as simple as can be manufactured to give great economy combined with high efficiency. We can refer to scores of highly satisfactory installations in electric power and tramway plants, collieries, cotton and paper mills, steel and iron works, etc.



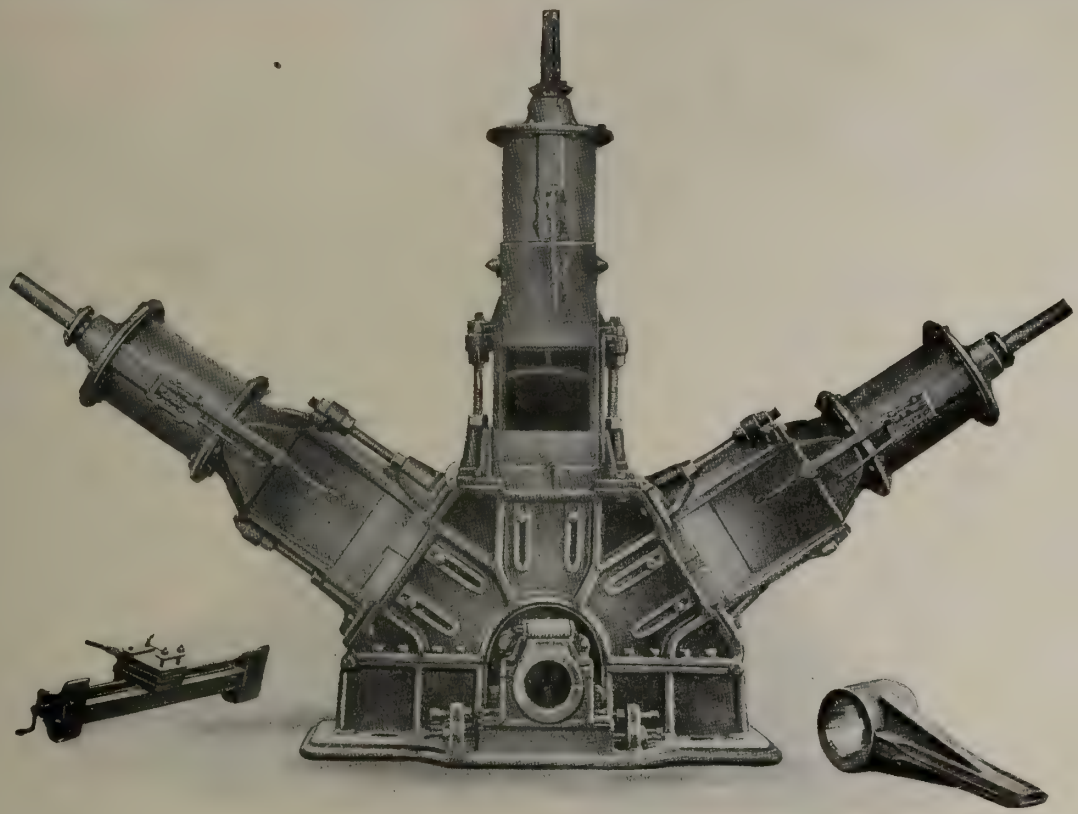
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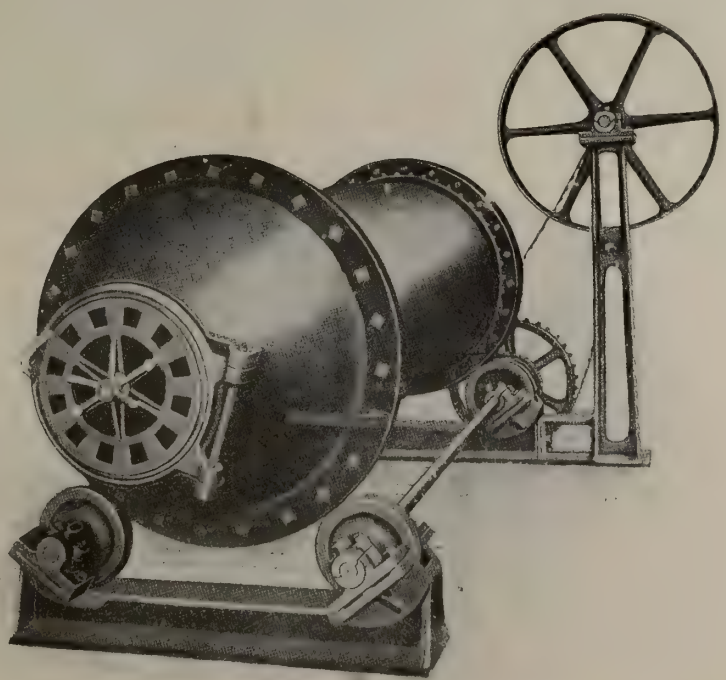
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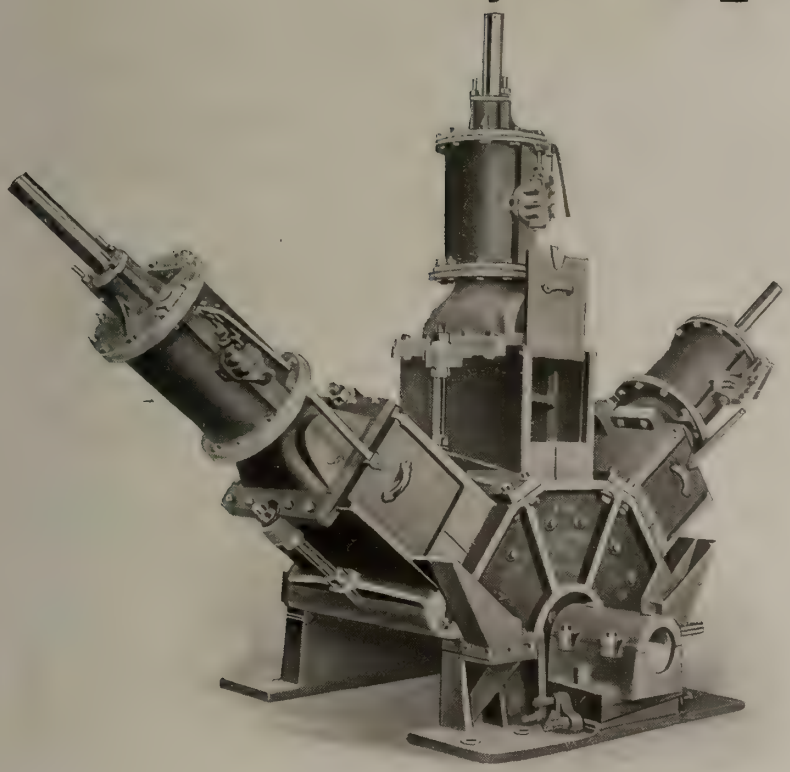
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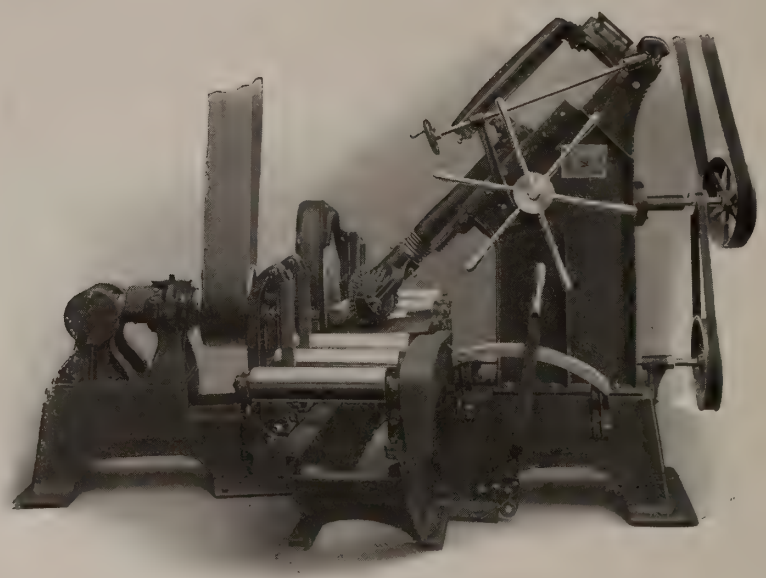
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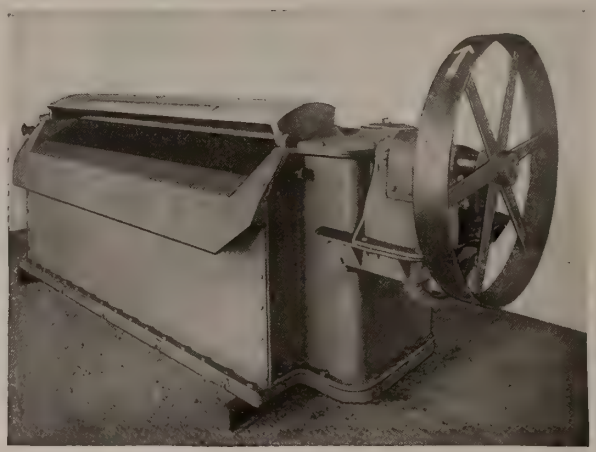
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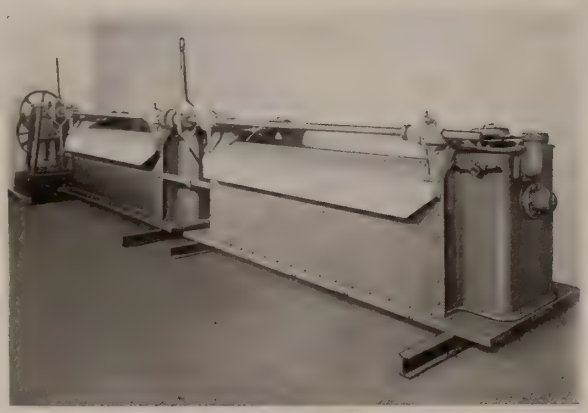
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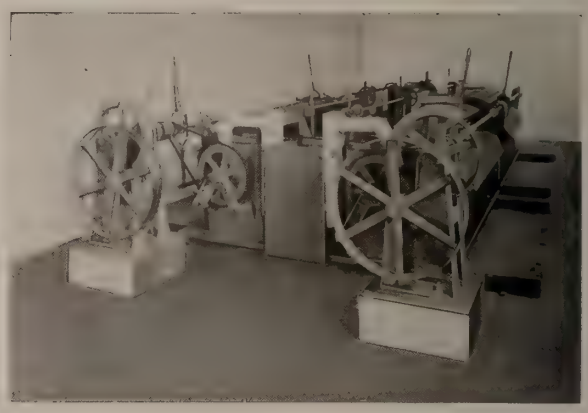
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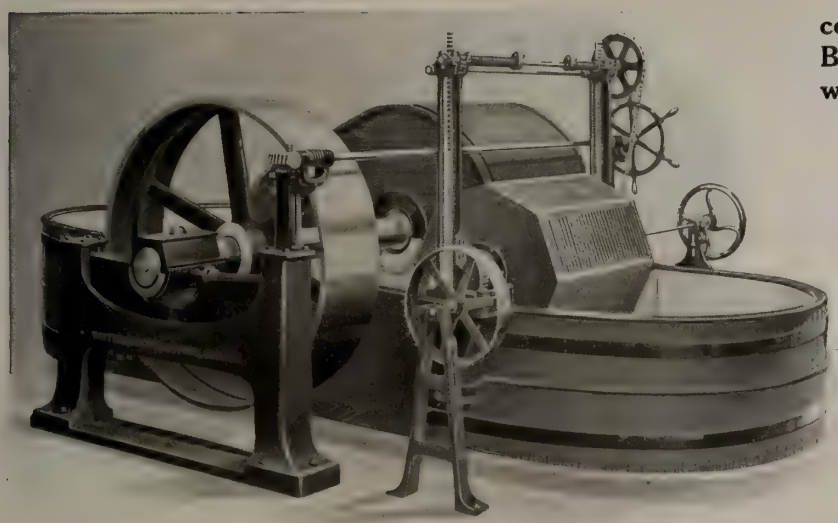
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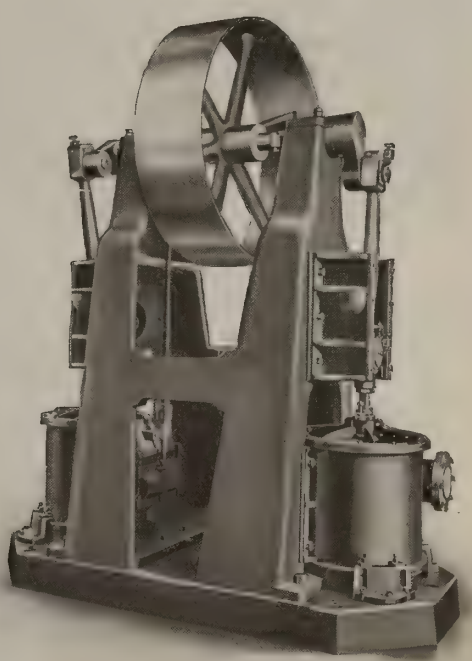
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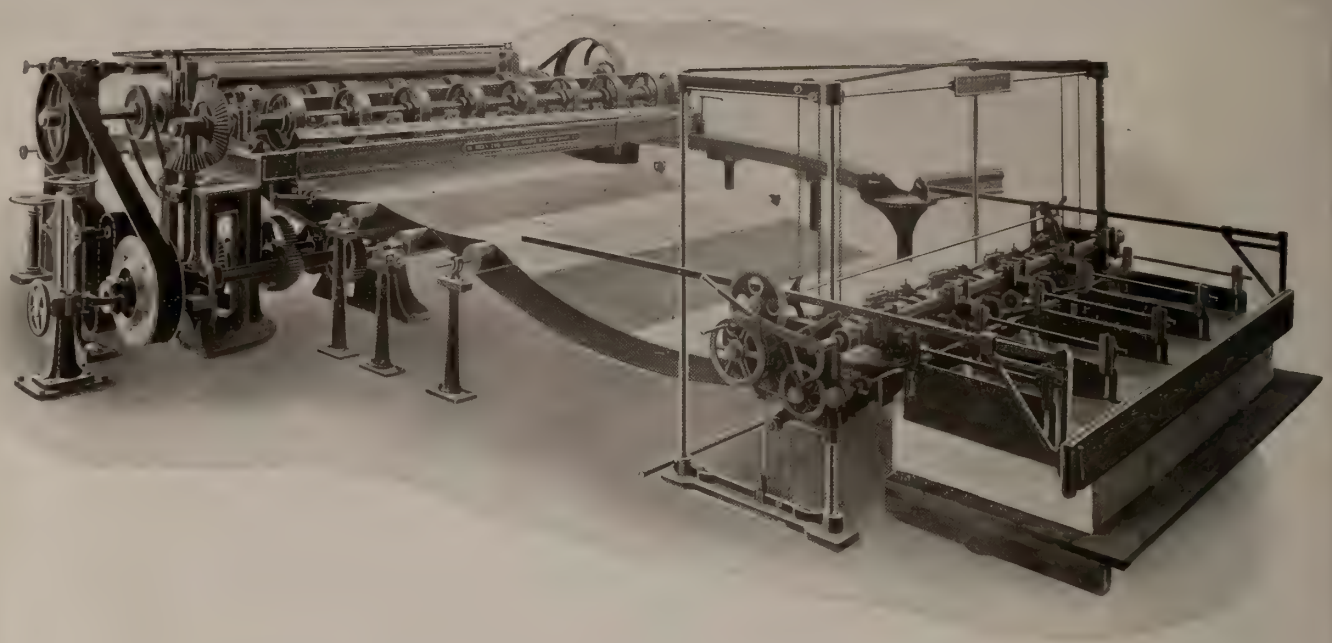
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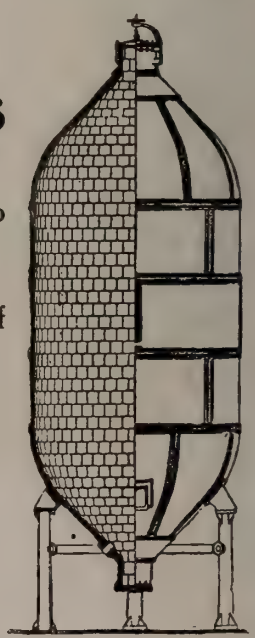
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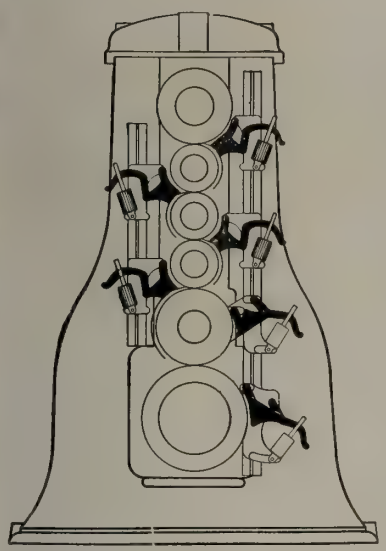
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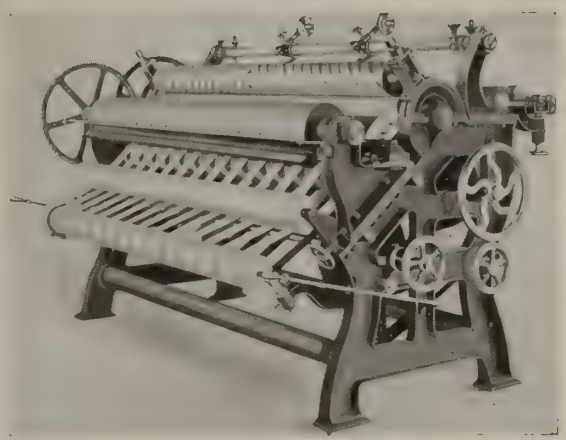
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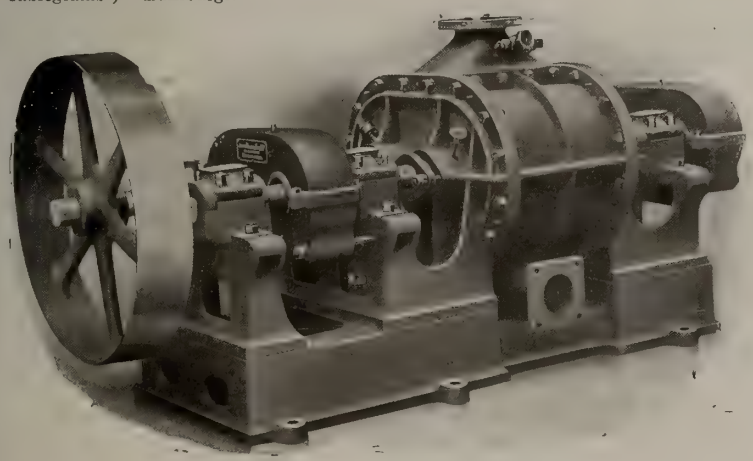


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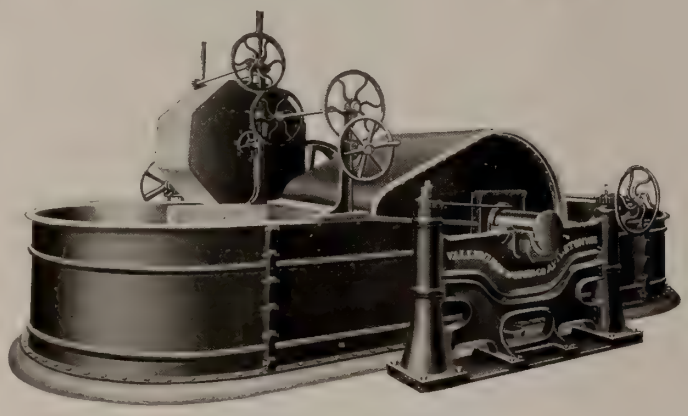
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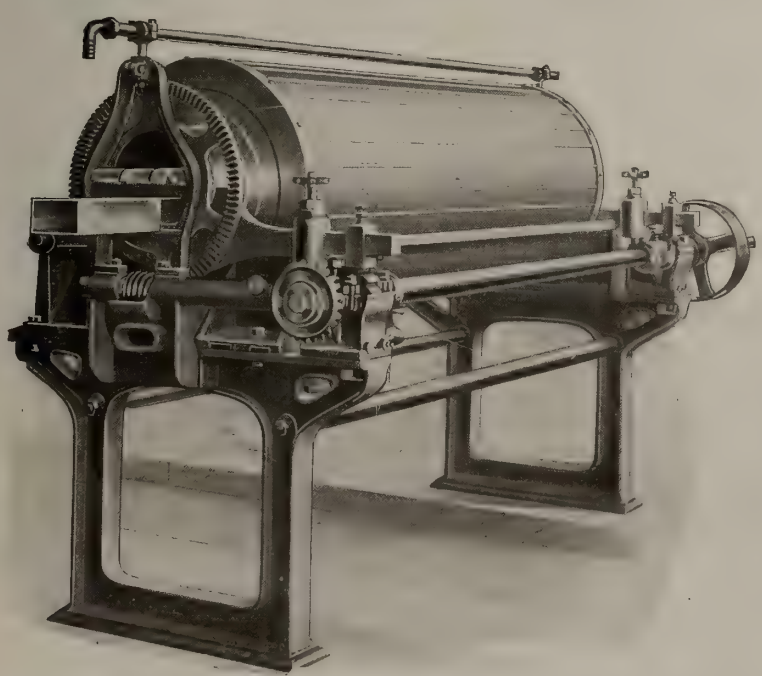
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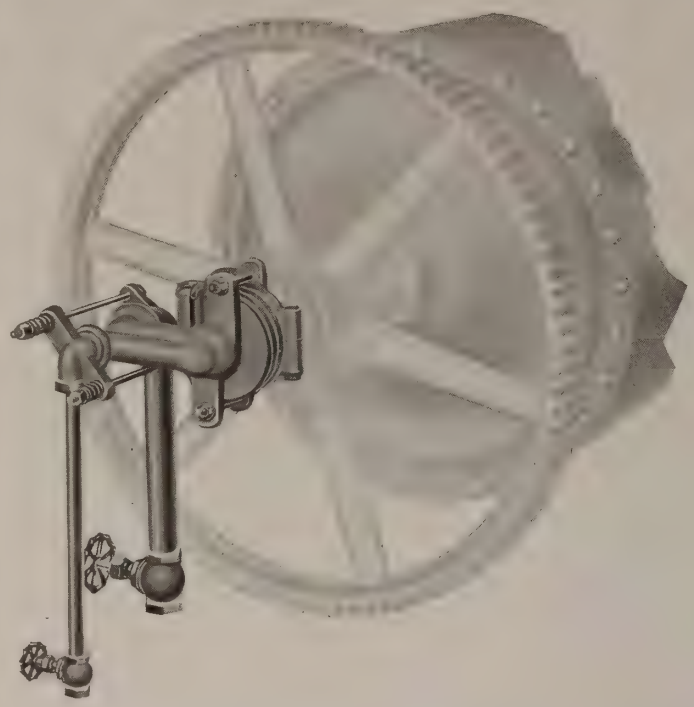
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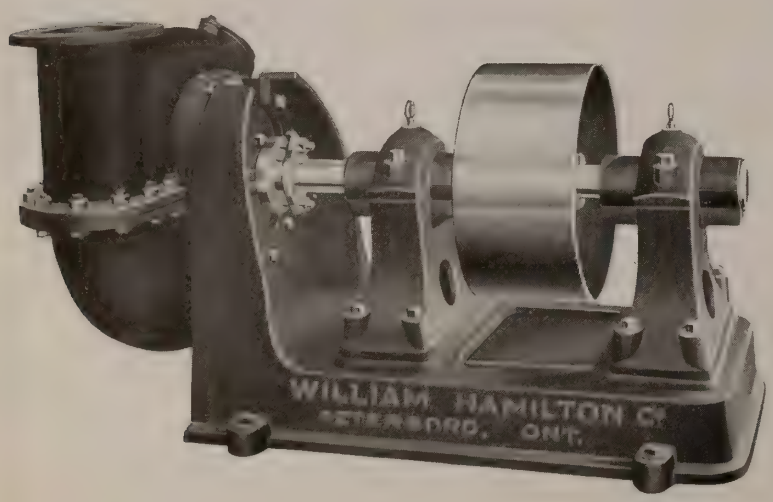
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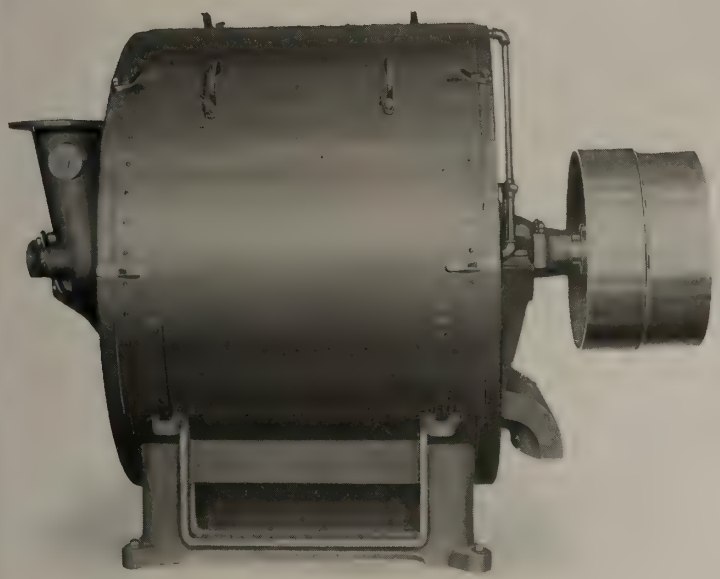
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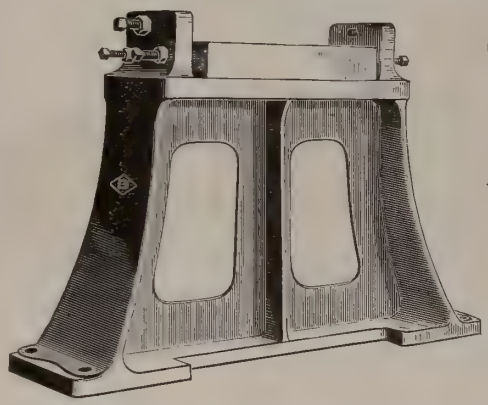
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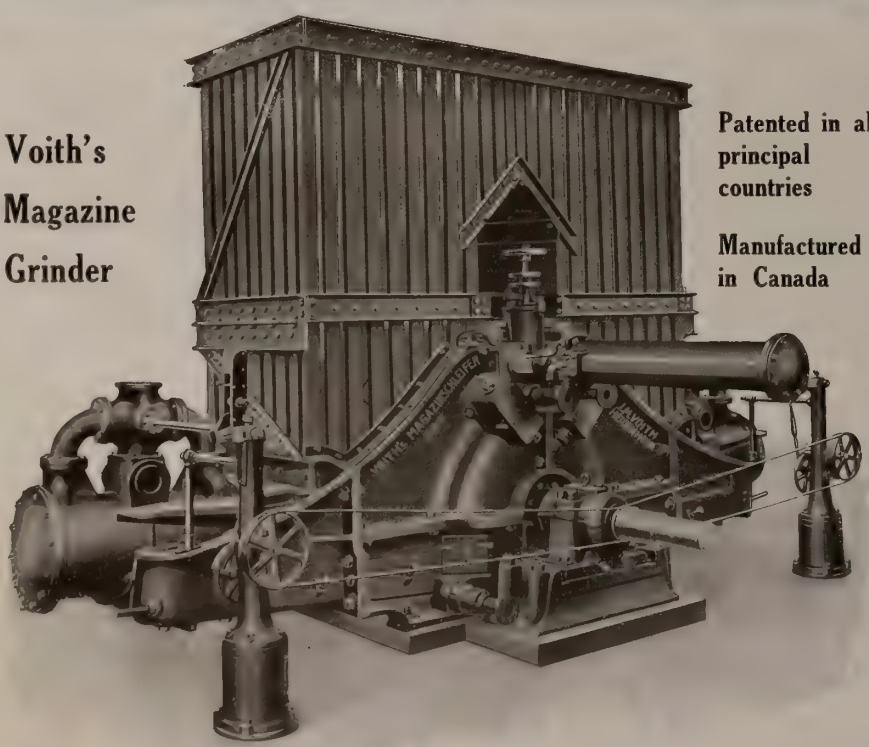
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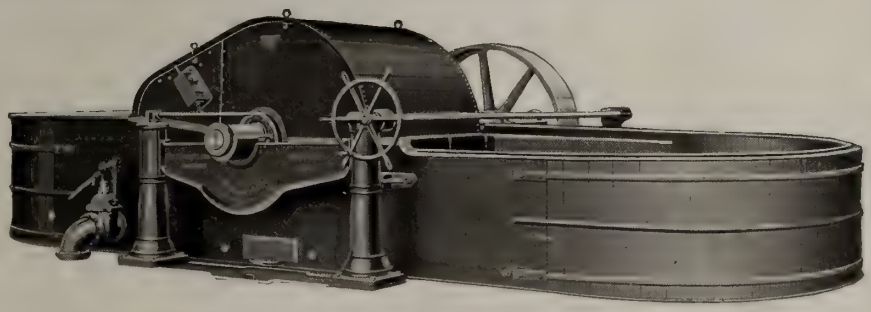
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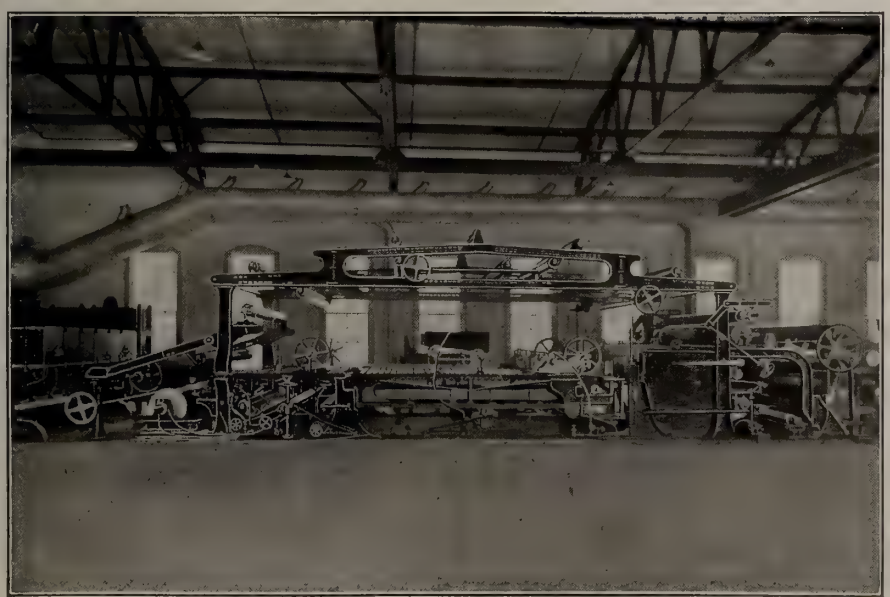
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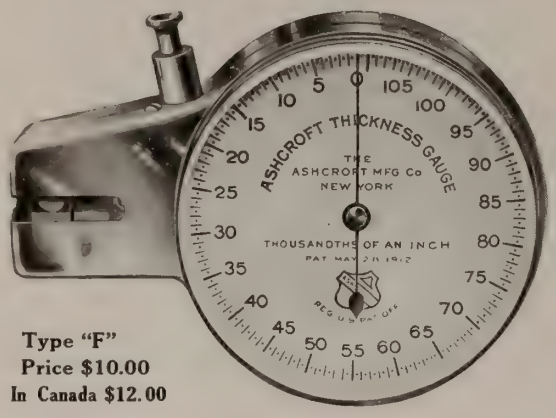
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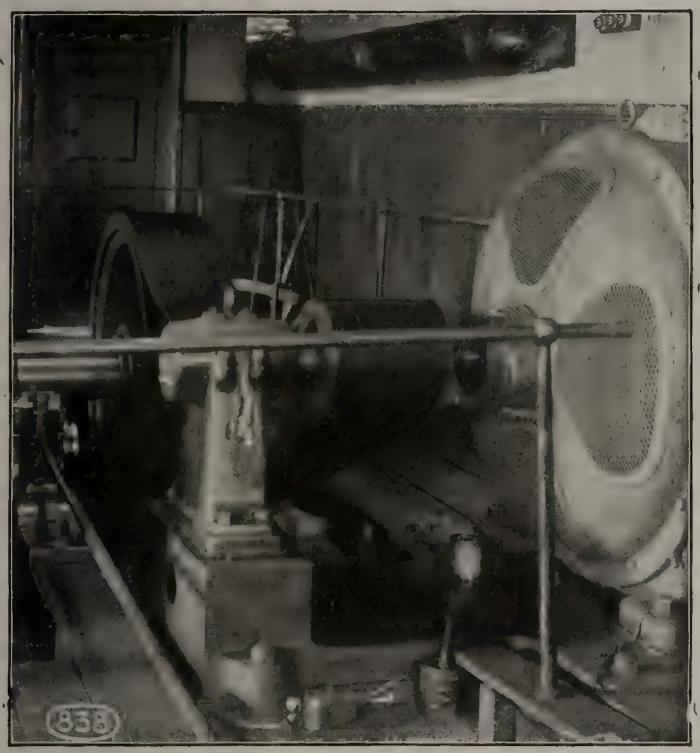
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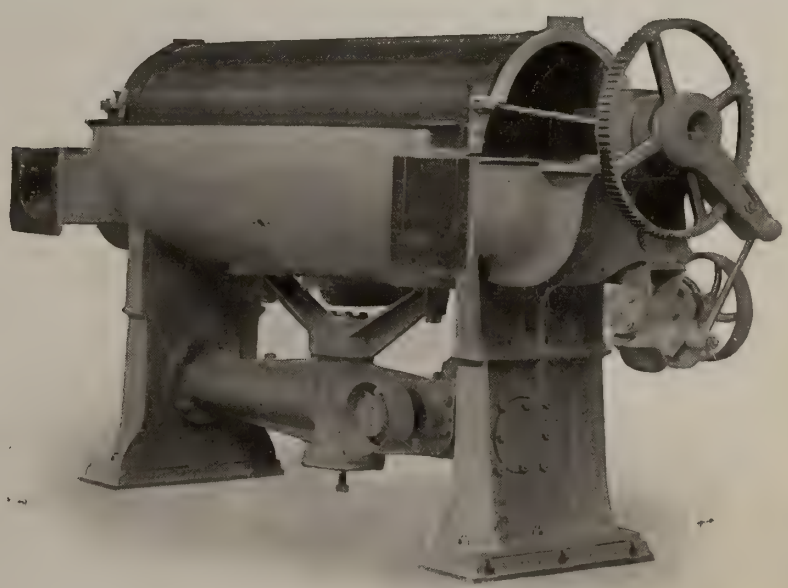
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Pulp and Paper Magazine

OF CANADA

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

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CANADIAN FORESTRY CONVENTION

The annual convention of the Canadian Forestry Association will this year be held in Winnipeg, in July 7th-9th. A number of the most interesting problems in forestry, in woods operations will be brought up and discussed from a scientific point of view. Especially will the matter of forest fires be further dealt with.

Canada is at the present time burning out from fifty to two hundred million dollars of timber in the year. Our timber cut amounts to approximately one hundred board feet per acre, or eight billion board feet per year, and our fire loss something like nine hundred board feet per acre per year. The worst feature of this situation is the fact that we are burning up our young growth, forest litter and soil fertility on hundreds of thousands of acres, which means no timber in the future for our children and children's children.

Forest fires are continually making deserts in many of our most arable sections, with the trees and the young growth go the roots and the soil cover with their powers of holding water and soil together. The result is that in these districts which are denuded at this rapid rate the tendency is that floods appear and we are inviting national disaster such as has been experienced within the last few months in the United States.

Recently the Forest Department of British Columbia instituted an energetic campaign when they decided to confer with all members in the Government giving authority to issue, suspend and cancel fire permits under which similar authority will hereafter be enjoyed and exercised by all road superintendents. These officials now come under the definition of foresters for permit issuing purposes. This also instituted a number of severe rules governing camp fires and fires of all natures in the woods between May 1st and October 1st.

The Canadian forest area comprises 800 million acres, about half of our country capable of growing tree crops and nothing else, yet only a fraction of this forest area is growing trees as it might, the rest being comparatively unproductive. We must have forests, everything in the houses we live in, to the books we read are made from the product of the forest. We need timber, pulp, an equable water supply, fish and game, etc. A crisis is seen coming—when the forests which for a century men have thought inexhaustible are going to be greatly depleted. It is our duty to prepare for this contingency. To-day is fifty years ago from the year 1963, and that is not very far away.

All Canada's modern development, Confederation, the great railways, the growth of the West, most great machines have come in the last fifty years. Fifty years is a very short time in the life of a forest. Most of the timber being cut in British Columbia to-day is over two hundred years old, some of it over eight hundred years.

This production and its development costs money, France has spent $35,000,000 planting on watersheds, Germany spends $13 per acre per annum and gets gross returns of $24 per acre yielding net profits of $11 per acre every year. As a whole German forests produce $2 net per acre annually. Canada spends much less than one cent per acre of the forest lands under

management. If we set the fire loss against the timber product our forest balance sheet shows an enormous deficit. We must stop these losses and arrest the waste. Every individual interested in the extension and development of the country should be enthusiastic in doing their share to promote the country's greatest national asset.

A further duty is for the Dominion Government to prohibit the export of our forest wood from the country providing raw material for our competitors. We are sending a million a year of pulp wood out of this country which takes 200 years to duplicate and frequently is never replenished. Every possible means should be taken to conserve our forest resources and promote the development in Canada of the industries which they concern.

TECHNICAL EDUCATION COMMISSION'S REPORT

The Report of the Technical Education Commission has been laid on the table of the House shortly before it prorogued.

This Commission spent some time investigating the various systems of technical education in the United States, Great Britain and other European countries, and during that investigation much attention was paid to the workings of the various schools established in those countries.

The outstanding recommendation in the report of the Commission is a Dominion development fund of three million dollars, to be provided annually for a period of ten years, and to be divided among the provinces on a basis of population.

The Commission emphasizes the importance of adopting a plan which will preserve provincial control, encourage local initiative and develop local responsibility. The importance of having the manufacturing and commercial interests of any locality ready and able to co-operate in carrying out the work is also dwelt upon.

After their investigation of elementary education in relation to industrial and technical education, the Commission is of the opinion that while all children to the age of 14 years should receive the benefits of elementary general education up to at least the standards provided by the school system of the place or province where they live, that, after 12 years of age, for children whose parents expect or desire them to follow manual occupations, provision should therefore be made in the schools of Canada, for training of the senses and muscles, more and better drawing, more physical culture, nature study and experimental science, pre-vocational work, more and better singing, organized and supervised play and games.

In the opinion of the Commission, it is important:

1. That workers in factories, whose main task is to attend or operate machines, should receive instruction and training, which would develop all round power and skill, and increase their interests beyond the routine of automatic operations.

2. That such training should be provided as will conserve and develop occupations wherein skilled handicraft is required.

3. That the interests of the rural population should be conserved and promoted as far as possible by industrial training and technical education suitable to the needs of its workers.

4. That the needs of girls and women for organized instruction and training in the elements of the sciences and arts, which underlie successful housekeeping, and home-making under modern industrial conditions, should be recognized and provided for.

5. That increasing attention should be given to opportunities which now exist or which may be provided, for the conservation of life and health and for the development of their powers.

Canada is in urgent need of a more practical system of education. The work being done in Ontario, as outlined in another column, is very commendable, and yet it is lacking in many details. If these educational faculties are for the masses, which, indeed, is the purpose, the masses should be catered to. If the boys and girls working in our factories are to receive the benefit special attention should be paid to their requirements. This is not being done under the Ontario system. If industrial education for children is to be successful there must be some compulsion. Then, with the co-operation of manufacturers and school authorities, the expenditure would be productive of some good by reaching the masses and adopting the studies and the operation of the schools to their conditions and requirements.

This report is of practical interest to the pulp and paper manufacturers. Mr. T. Lindsay Crossley, of Montreal, brought before the Commission the needs of our industry, and pointed out that Canada needed provision for trade schools in this line. It is hoped the handsome appropriation recommended will be passed, and that the pulp and paper industry will benefit by a suitable appropriation. Let us urge our needs before the Commission and Government.

The Hon. Wm. Pugsley called attention of the Canadian Parliament to the discrimination of the new U. S. tariff in the sulphite pulp clause. His remarks are printed in another column. He has plainly stated the facts which have been urged by the Pulp and Paper Magazine since the tariff came up for discussion, that the gross discrimination against Canada is a matter for Government action. The pulp manufacturers of Canada are indebted to Dr. Pugsley and to Premier Borden for his hearty response.

OUR GOVERNMENT'S ADVANCE STEP

The establishment in Canada of Forest Products Laboratories as announced in the last issue of the Pulp and Paper Magazine is one worthy of the greatest commendation by all interested in the conservation of our natural resources, elimination of waste in manufacture and the promotion of efficiency in conversion from raw material to manufactured product. The Government has established these laboratories on the basis as outlined in another column of this issue with the idea of promoting all these points and being a great boon to our Canadian manufacturers.

Great credit is due to Dr. Roche, Minister of Interior, and Mr. R. H. Campbell, Dominion Director of Forestry, for their advance in this connection. We have enormous supplies of raw material, but we have appalling wastes which are naturally increasing, and on a numerical basis are most appalling.

We solicit the support of the entire Pulp and Paper manufacturers for the Government in advancing the objects for which these laboratories have been organized, in making in Canada a further addition to the advanced practice which we find in Germany, England and the United States.

EDITORIAL COMMENTS

It has been announced by the Honorable Mr. Pelletier, Postmaster-General, that parcel post will be introduced immediately. This will have a great effect on the Canadian wrapping and board industry. The proposal is to divide Canada into a number of zones somewhat similar to the system adopted in the United States. This system promises to be very satisfactory and popular, and as a result the consumption of wrapping paper and board will be enormously increased immediately upon the adoption of the new parcel post system.

During the last week one of our large paper mills contracted for one thousand tons of Norwegian sulphite—this to be used in newspaper which they manufacture for the American market. The Government rebates 99 per cent. of this duty, which makes it possible to bring foreign sulphite into Canada which is to be shipped to the United States, practically free of duty—such a condition makes a very serious outlook for Canadian sulphite mills. This, coupled with the fact that the United States are discriminating against us in their new tariffs should make sulphite interests most cautious before projecting any new developments.

A report just completed by the Bureau of Foreign and Domestic Commerce in the United States, shows that Canada is the best customer of the United States, buying more from them than all the nations combined. In 1868 United States furnished 34 per cent. of Canadian imports; in 1880, 40 per cent.; 1890, 46 per cent.; 1900, 60 per cent.; 1910, 59 per cent., and 1912, 65 per cent. In spite of tariff preferences Great Britain's share with the markets has steadily declined in favor of the American manufacturers. We also find that the United States, who should be most cordial and open, have attempted to stab sulphite industry by discriminating against us in favor of foreign countries who buy very small proportions of their exports.

The arguments in connection with discrimination in the new United States tariff against Canada has been a subject of severe discussion among Canadian paper men. The American point of view, is, that this discrimination should induce Canada to remove her wood restrictions.

It was recently pointed out by the general manager of one of the largest paper mills that all the benefits which we are deriving at the present time from the American market are being paid for by us by the fact that we ship one million cords of pulpwood annually to other mills. We are giving them $10,000,000 of raw material to keep their plant running, provide dividends for American capitalists, and bread and butter for American laborers—all for the purpose of selling them about $8,000,000 of pulp and paper. Surely, as the above paper man pointed out, we do pay for the privileges of the American market—the privilege of selling them $8,000,000 worth comes rather high, looking at it from a rational point of view.

In spite of this we find most irrational statements made by contrary interests to such an effect that legislation is being influenced against Canada. For example: recently a Senator of the United States Senate, claimed that Canadian Provinces were inserting in all their timber lease regulations, that the holders of timber limits must build mills in Canada within three years. This was based upon the fact of the new legislation which has been put through by the New Brunswick Government, and which has been the subject for severe criticism on the Canadian side.

Instead of assisting Canadian industry as this Senator pointed out, it has, as reported in the last issue of Pulp and Paper Magazine, deterred development to a large extent—such statements only injure our interests and are but a further example of how unreliable foreign representations may be.

A report from Fredericton, N.B., says that the Edward Partington Company's cut of between 12,000,000 and 14,000,000 superficial feet on the Nashwaak River and its branches is hung up. The largest portion of the lumber on the Nashwaak was to go to the company's pulp and paper mill at St. John. The Gibson mills at Marysville, now owned by the Partington Company, are closed down and it will be at least a month before sawing operations are commenced. Not more than three-quarters of a million feet of logs have floated down the river into the booms at Marysville this spring.

PULP AND PAPER UNDER THE MICROSCOPE

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CHAPTER V

We have already alluded to the fact that coniferous woods such as spruce and fir when in the form of pulp, are readily distinguished from the deciduous or foliage woods, by the general character of the fibres examined under the microscope. The examination of a number of pulps prepared from various coniferous woods is a

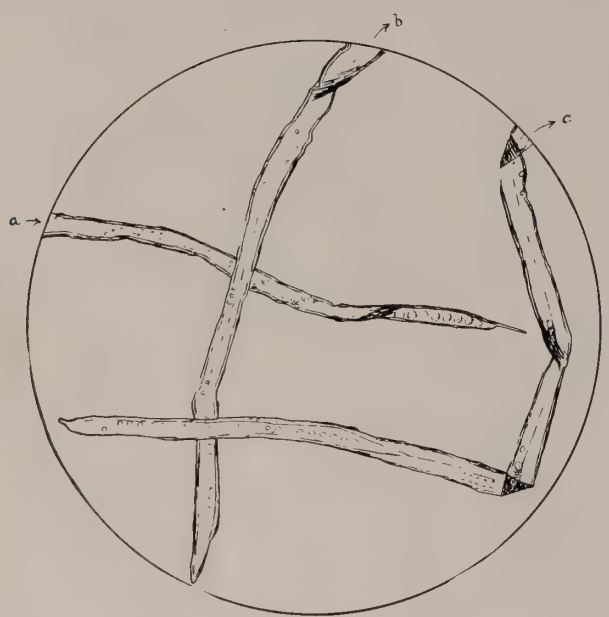


Fig. 1

matter of some difficulty, unless special precautions are taken.

The identification of the foliage woods is rendered less difficult by the existence of several cells of different shape and size. But with the coniferous woods, which produce true wood fibres almost exclusively, the distinctive peculiarities are less pronounced, and must be sought for in the shape of markings on the fibres rather than specially formed cells.

In such cases it is necessary to employ a somewhat high magnification such as 200-250.

In further explanation of the suggestions already made for the drawing of fibres in outline as contrasted with the microphotograph, we append three illustrations.

Fig. 1. White Spruce.

This illustration has been produced by mounting a few fibres of white spruce pulp, prepared by the soda process, on a glass slide, suitably stained with Herzberg's solution. The end of a fibre was selected for reproduction and this is shown at "a." The microscope was adjusted for drawing as described in a previous chapter, a half-inch objective being used in conjunction with the short body tube of 6 inches length. Under these conditions about one-third of the fibre was seen in the field as represented by "a." The outline of this was traced, with markings drawn afterward by hand, the fibre itself being examined under the higher power (¼-inch objective), in order that the nature of the markings might be more clearly seen.

The other end of the fibre was then brought into the field by suitable movements of the mechanical stage, the paper on which the tracing was made being turned so as to allow the fibre to be drawn in a convenient position as shown in Fig. 1.

The fibre indicated at "c" is drawn exactly as it appeared under the microscope, the mechanical stage having been adjusted so as to bring about half the fibre into the field of view.

This method illustrates one of the chief advantages of making a drawing in preference to taking a microphotograph, in that it is possible to bring into the field of view the fibres which it is desired to reproduce, and to ignore any other fibres which may be present in the field at the same time.

Fig. 2. Poplar.

This drawing was obtained in the same way, various fibres being brought into the field as required, traced, and the markings completed after the outline had been drawn. It is quite easy to draw the individual fibres and to ignore any which cannot easily be seen.

A strong contrast between the foliage woods in giving very short cylindrical fibres with large distinctive cells, and the coniferous woods with broad flat ribbon-like fibres is obvious.

Fig. 3. Jack Pine.

The distinctions between the coniferous woods are much less marked as will be seen by comparing Fig. 1

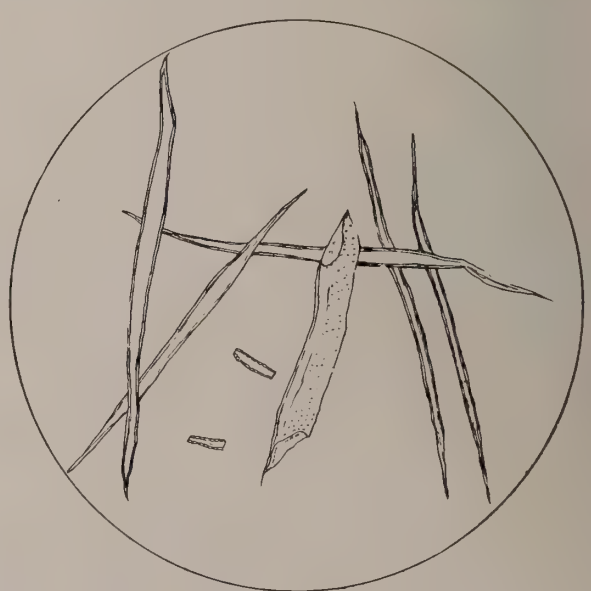


Fig. 2

showing white spruce with Fig. 3 showing jackpine. The identification of any particular coniferous wood requires a very prolonged examination of the pulp,

and, in most cases, a close comparison with pulps of known origin.

Although the distinctions of the fibres shown in the drawings are fairly good, it is evident that the determination of the particular species of wood employed is not to be settled by a mere superficial observation, such as is sufficient to discriminate between coniferous and foliage woods.

We have gone into somewhat close detail on these points as related to the drawing and measurement of fibres so that the student may carry his own investiga-

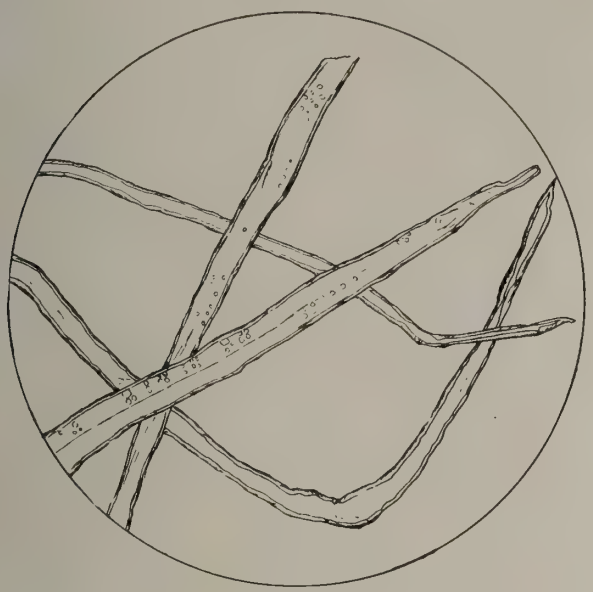


Fig. 3

tions to a sure conclusion. We do not propose to discuss such well-known fibres as mechanical wood pulp, esparto, bamboo, cotton, linen, and the ordinary paper-making materials as the existing text books supply all the necessary information.

In the next chapter we shall deal with some interesting microscope observations which may be usefully applied during the operation of beating and any investigations relating thereto.

MR. JOHN S. MACLEAN NOW PUBLICITY MANAGER FOR CANADIAN GENERAL ELECTRIC.

Mr. John S. MacLean has been appointed to take charge of the advertising and publicity work of the Canadian General Electric Company, Limited, and of the Canadian Allis-Chalmers, Limited, with headquarters in Toronto. The latter company, in addition to manufacturing an extensive line of machinery and appliances, will also act as sales agents for all the products of the Canada Foundry Company, Limited. Mr. MacLean held a similar position with Allis-Chalmesr-Bullock, Limited, for a number of years.

Nova Scotia reports that their drives are all down with ample supply of lumber to keep the mills going to full capacity. The prices have advanced, too, and the wood supply promises to be very scarce.

UNITED STATES TARIFF DISCUSSION

Special to Pulp and Paper Magazine.

Washington, D.C., June 12, 1913.—The Senate Finance Sub-Committee conferred last week with John Norris in New York. Mr. Norris opposed the imposition of any retalitory duty against Canada on print paper valued at not more than 2½ cents a pound, or the imposition of any countervailing duty on wood pulp, holding that both should be placed on the free list, unqualified by any proviso.

Following the conference with Mr. Norris, one of the members of the committee stated that he did not think the sub-committee would recommend any amendment to the paper schedule to the Finance Committee, but would throw the matter into the full committee for free action by the Democratic majority.

While the sub-committee would like to report the retalitory duty on print paper, they admit that they are afraid of the publishers.

"We do not want them to get after us as they did after Joe Cannon and Taft," said one. "I believe we have a great issue in free print paper, if we just stick to it. After all, why should we compel the American publishers to pay $2.00 per ton more for their paper just to get back at Canada? As regards the American paper manufacturers, they can surely make good under free trade conditions. Haven't they exported paper and paid duty on it to sell it abroad? This paper schedule looks to me like a good one to stop monkeying with. We have tried to force Canada's hand before without success. They have the best end of the string, for they have the pulp wood supply back of them."

It is now rumored that members of the sub-committee, who have been in favor of the retalitory duty on print paper, have been called off. Intimation is current that President Wilson is desirous of trying free paper for awhile. Judging from all appearances, Wilson, too, is afraid of the publishers, whom John Norris represents with misrepresentations of the American paper industry. It was suggetsed here to-day that Mr. Norris ought to be called by the Senate Committee investigating the lobby.

The sub-committee is expected to make its report to the Finance Committee before the end of the week, so that the Finance Committee can get the tariff bill in shape to report to the Democratic Senate Caucus next Monday.—Meb.

Mr. Carl Riordan, managing director of the Riordon Pulp & Paper Co., Limited, and president of the Canadian Pulp and Paper Association, returned from England on the 8th, accompanied by Mr. Read, the secretary-treasurer of the firm. Their trip to England, which was a business one, has been connected with the rumors of the large new mill which is proposed for that firm at Haileybury and New Liskeard, Northern Ontario. Application for wood and water limits have already been made and it is understood that the English shareholders have decided to go ahead with the erection of a very large plant involving something like $3,000,000. The location here would give these mills the advantage of the big Temiskami water route, and also afford excellent railway facilities. The streams are all deep and make good driving and openings for such a mill in that district are considered most promising.

THE PAPER MAKERS' ASSOCIATION OF GREAT BRITAIN AND IRELAND (INCORPORATED)

Annual Conference in London

(By our London Representative.)

On May 29 the annual meeting of the Paper Makers' Association of Great Britain and Ireland, 1912 (Incorporated), was held in London, and in the absence of the president, Sir Edward Partington, who was indisposed, the chair was occupied by Mr. Joseph Dixon. There was a large attendance and the chairman explained that they met under rather unfortunate circumstances, inasmuch as the vice-president, Mr. Lewis Evans, was undergoing an operation for appendicitis, but the report received that morning removed all anxiety.

The meeting then settled down to do business and after the minutes of the last annual meeting had been submitted and partly read, a member contended that all the minutes should be read aloud by the secretary, unless they were printed and circulated amongst the members. Sir John Thomas said there were private matters in the minutes which they did not want circulated in the newspapers. Mr. George Clapperton said there was only one way out of the difficulty and that was to print the minutes in future and issue them along with the annual report to the members of the association. Sir John Thomas agreed, and the suggestion was resolved into a motion and adopted.

The audited accounts were presented and the balance sheet adopted. It showed that the expenditure for 1912 (that is June 27 to December 31) was £389 7s 7d. Of this sum £50 had been contributed as a donation to the Chicoutimi fire relief fund. The income for the period reached £361 10s. 5d., mostly from subscriptions, interest, etc. Judging by the balance sheet the association is in a very sound position, and the invested reserve fund on December 31st, last, was £1,000.

Owing to curtailment the annual report of the association contained nothing of really great interest to those outside the Association. The secret conferences held were kept quite private and no policy was expounded. A notable feature of the report was the resurrection of the 1911 wood pulp contract note question between the paper makers in England and the Scandinavians. It says that a conference at the desire of the Scandinavians was held for the purpose of discussing the note and the following delegates met: Norwegians, F. A. E. Silloc, A. Bommen, J. Evens; Swedes, Mr. Beisart; British Wood Pulp Association, F. E. R. Becker, L. P. Andrews, J. Rustad and Mr. Erickson; British Paper Makers, Joseph Dixon, T. T. Nuttall, Percy Dewson, and Thomas Armstead. In the discussion Mr. Bommen on behalf of the Scandinavian Associations, said: "We find ourselves obliged to oppose the alteration proposed by your esteemed association to clause (3) force majeure clause in so far as concerns the provisions respecting what effect shall be assigned to an occurring force majeure with regard to the fulfilment of running contracts. In such respect we shall hold on to the clause as it runs according to the contract note dated June 5, 1908. As far as I have heard I am under the impression that most part of the friction between your association and the Scandinavian associations has been in regard to this force majeure clause, and your objection against accepting the cancellation clause is the way in which that clause seems to be interpreted in England on arbitration. What you object to is not so much the cancellation clause, as the abuses of the clause, and if we can put a stop to the abuses, would that not be sufficient for you? Of course it is very important for us to have the cancellation clause." In reply Mr. Dixon said: "If you will suggest to our association a clause protecting us against trivial and dishonest claims, I think we might submit it to our association again. We have no instructions to accept cancellation, not one of our paper makers will entertain it." Mr. Bommen agreed to formulate a clause which will protect English buyers against unfair claims of force majeure. The report then goes on to deal with the well sustained demand for the production of the British mills. "Manufacturers have been unprecedently busy," it says, "it being very evident that consumption of paper is rapidly increasing; papermakers in other countries have also enjoyed a fair shore of prosperity....."

Discussing the force majeure clause of the wood pulp contract note, the chairman said it was a complicated question. The point was this: They were all practically unanimous in England that the force majeure clause should cover postponement of any deliveries of pulp that had failed to be sent over by reason of a shortage of water, or other causes, including fire. They had had a very important discussion on this and the Scandinavians would not so far entertain the idea of postponing; they insisted that any deliveries having so failed to be sent over should be cancelled, and cancelled month by month. The British paper makers insisted that all stuff in all contracts, that was the whole of the material bought and sold, should be delivered. These were the terms on which the British insisted. It opened the door to a lot of doubtful business transactions if the seller was not obliged to deliver what he had sold. The British consumers had now got into the habit of making long contracts to cover five or six years. If during these years a seller and maker could find a reasonable excuse for stopping supplies and he was not forced to deliver at the end of a contract, the transaction became very often most unpleasant. His firm tried to get over the difficulty by insurance, that was insure the deliveries, but the insurance companies had their attention drawn to the risks they were running and had decided not to re-insure any long contracts against drought and fire. It was agreed, after the meeting fully discussed the matter, to leave the question to a committee to settle with the Scandinavians and instructions were given that the postponement clause be insisted upon.

A letter was read from the American Paper and Pulp Association regarding the translation of scientific papers from the Vereinder Zellstoff-und-Papier-Chemiker, Berlin, and the subject was left to the southern committee of the Association to deal with. The chairman said the translations would be of the greatest possible interest to the British papermaker.

The association next decided to sit in private so they evicted the reporters and within closed doors, notwithstanding a suggestion from the chairman that the re-

porters might remain, but not take any notes, they discussed future prices, labor unrest, wages, and the formation of a federation of members of the northern district. The labor question is a great thorn in the members' side and they cannot all agree on a settlement, some being in favor of meeting the men and their demands and others are dead against them. The total membership of the association is 129.

At night the annual banquet was held in the Hotel Cecil, under the chairmanship of Mr. Joseph Dixon. There were over 200 present, and the whole affair was magnificently arranged. The Right Hon. Harry Lawson, M.P., (owner of the Daily Telegraph paper mill and head of the well-known London daily paper), proposed the health of the members of "The paper trade and Paper Makers' Association." He said it was a mistake to think that the foreign competition from which the paper trade suffered, was a thing of recent origin. He believed it to be true that before the reign of Elizabeth nearly the whole of the paper used in England was imported, and he was also informed that the licenses issued during the reign of Charles II. were written on foreign made paper and the actual watermarks showed that even then the paper was "made in Germany." The German competition in the days of Charles II. was as much feared in the paper trade in England as the German and Scandinavian competition was now. He need hardly say that the best paper-makers in the world were to be found in England, their mills being up-to-date and their work good. In conclusion Mr. Lawson sounded an interesting note. He said: "We cannot do without organization. In organizing ourselves there can be no doubt the paper-makers have done the right thing. We want our intelligence department just as much as our army and navy want theirs. We are living in an age of keen competition and organization is necessary; there are also the relations between capital and labor to be considered, and there is every reason why those who promote and animate the industry should stand together as one man, just in the same way as those whom they employed. Whatever way you look at it, organization is a necessity to every industry." Mr. H. W. T. Garnett replied on behalf of the mill owners, in a humorous speech, and thanked Mr. Lawson for the House of Commons manner in which he proposed the toast.

Mr. John E. Jepson proposed the success of "The British Wood Pulp Association, the Allied Trades and Visitors." He said that the imports of wood pulp were going on increasing and during the last year or two the price of sulphite had advanced so much that it looked like the fatal blow being struck before long if it was $48.00 or a little less per ton. Before they reached that level he hoped something would come to the relief of the paper-maker and lift them out of the hole into which they had tumbled. The British Wood Pulp Association had got the business of the industry on a sound footing and they all appreciated the services the Association had rendered. Mr. F. E. R. Becker responded to the toast and said the pulp men were the paper-makers "hewers of wood and carriers of water." They were proud of the industry, which was so successful.

Col. John Birrell, V.D., proposed the health of "The Chairman," and Mr. Joseph Dixon, in acknowledging made a very humorous speech. "They had," he said, "to express their deep regret at the absence of Sir Edward Partington, who had filled the position of president with such great distinction for so many years. They had been in the habit of meeting him year after year and listening, that in the end it was like sitting at the feet of Gamaliel. Papermaking was nigger work. All his sons said it was, because they had to be up early in the morning and work late at night to make that success which "Dixon's make" had obtained. Paper-makers had often been spoken of as having happy and contented appearances and he had no doubt that the reason was that they bought their sulphite at less than $33.60. "Long may you continue at $33.60," added Mr. Dixon, "because, if you have to pay a little less than $48 I am very sorry for all of us. If you pay just $48 and sell paper at four cents, God help you." In conclusion Mr. Dixon advocated organization amongst the employers just the same as the men employed by them. It was impossible to break up a union now, and, therefore, the mill owners should have their federation and go in collectively for bargaining with the men.

The new officers of the association are: President, Mr. Lewis Evans; Vice-Presidents, Mr. Joseph Dixon and Col. John Birrell; Treasurer, Mr. Herbert Green; Secretary, Thomas H. Edwards, 35 Queen Victoria Street, London, E.C. The committees for Scotland and the Northern and Southern divisions of England, were also appointed.

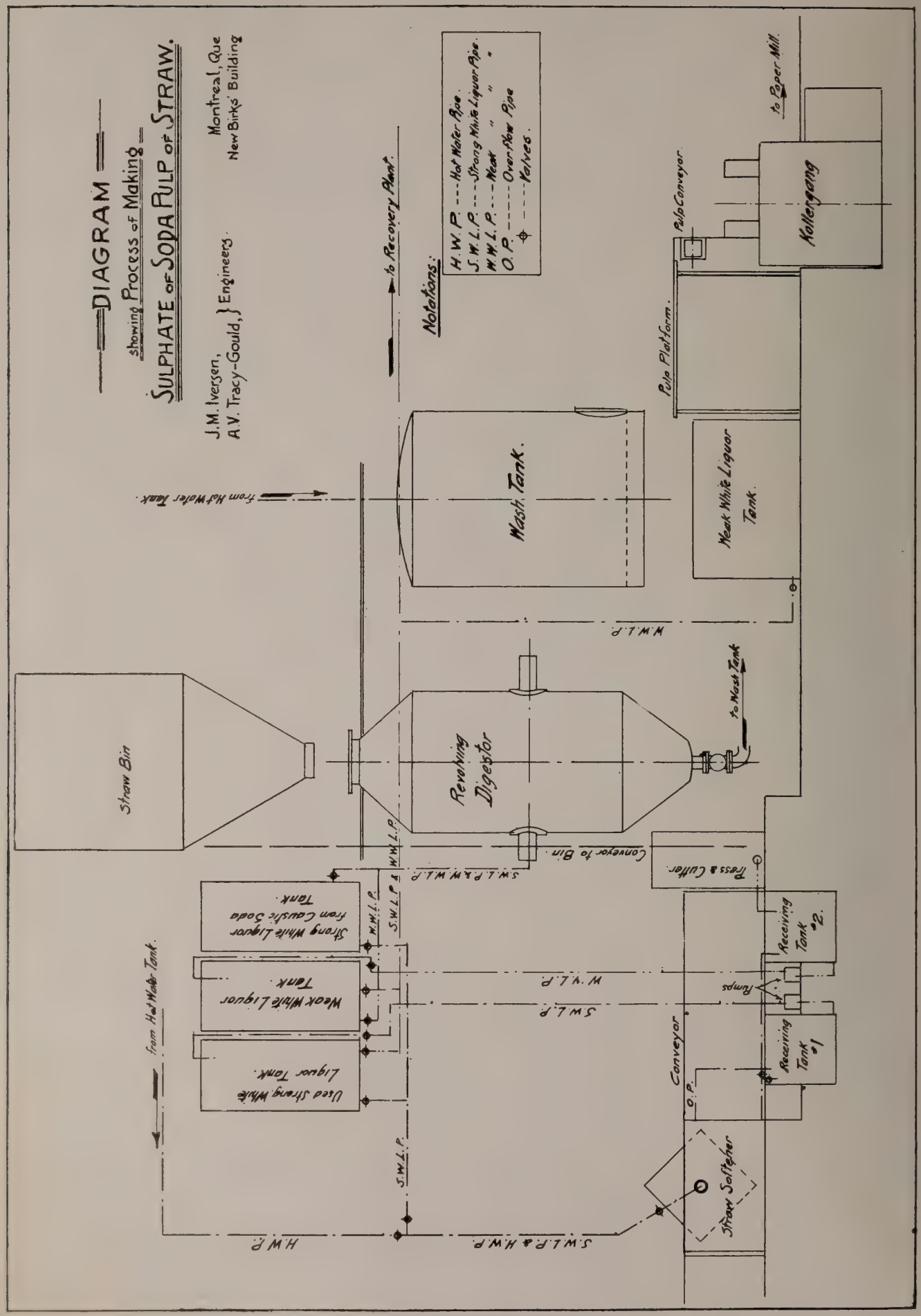
SULPHATE OF SODA PULP OF STRAW

By J. M. IVERSEN and A. V. TRACY-GOULD

Due to the enormous consumption of wood for pulp purposes, the cost of same has gradually been rising and manufacturers are beginning to realize that at the existing rate of consumption of wood a considerable rise in price of wood will follow, which condition will ultimately reflect upon the manufacture of cheaper grades of paper, such as wrapping, etc.

Different substitutes for wood have been used in many instances and the results obtained were in several cases most gratifying, as to the possibility of making same a success commercially.

The manufacture of straw pulp of uniform quality has always been a problem, owing to the difficulty of dissolving the enamelled surface of the stalk. The only known practical agency to remove or soften the enamel, which is used by some companies in Europe, is pure caustic soda, but owing to the cost of same, the cost to manufacturers of straw pulp by using that agency, has been exceedingly high and therefore attempted only in solitary cases. Also due to the fact that during the cooking process of straw in digesters, the inner fibres dissolve quicker than the outer harder enamelled fibres it has been a difficult problem to arrive at a uniform quality of pulp. In introducing the sulphate of soda process, a system, different from the present has been evolved.


DIAGRAM
showing Process of Making
SULPHATE of SODA PULP of STRAW.
J.M. Iversen, A.V. Tracy-Gould, } Engineers
Montreal, Que
New Birks' Building
Notations:
H.W.P. --- Hot Water Pipe.
S.W.L.P. --- Strong White Liquor Pipe.
W.W.L.P. --- Weak " " "
O.P. ------ Over-flow Pipe
------ Valves.
to Recovery Plant.
to Paper Mill.
Pulp Conveyor.
Pulp Platform.
Kollergang
Mash Tank.
Weak White Liquor Tank.
from Hot Water Tank.
Straw Bin
Revolving Digestor
to Mash Tank
Conveyor to Bin
Press & Cutter
Strong White Liquor from Caustic Soda Tank.
Weak White Liquor Tank.
Used Strong White Liquor Tank.
Receiving Tank #2.
Receiving Tank #1
Pumps
Conveyor
O.P.
Straw Softener
from Hot Water Tank.
H.W.P.
S.W.L.P. & H.W.P.
S.W.L.P.
W.W.L.P.
S.W.L.P. & W.W.L.P.
S.W.L.P.
W.W.L.P.

The cost of manufacture of such pulp not only becomes very low, but an item of at least equal importance comes here into play; the pulp becomes of a uniform and stronger quality than has so far been obtained. It is our object to describe in a few words, the process in question, and we hope by so doing to assist in developing that industry. The diagram will assist the description.

The straw is placed in bundles of about 3 feet in length by about two feet square in the revolving straw softeners, which are placed in units of 3, 4, 5, 6 u.s.f., as many as the capacity of the mill calls for. The straw softener consists of a tank, made of sheet iron and is to be water tight. Inside of same, supported by bearings, rests a drum, with a capacity of say four bundles of straw, made of same material, but having perforations all over the surface.

The white liquor is forced in by gravity through the pipe shaft of the drum. The portion of the shaft inside the drum also has perforations, through which the liquor—at a temperature of between 180° to 200 Fahr. —issues and acts upon the straw. The tank is provided with an overflow pipe, which returns the liquor to a receiving tank, tank No. 1 (see diagram).

An outlet pipe is connected to the bottom of the tank provided with a valve, this pipe also leading to the receiving tank No. 1, from which liquor is pumped to another tank placed in close proximity to the white liquor tank, and used over again with some addition of pure white liquor as the case may demand. In the same outlet pipe there is another pipe connected, provided with a valve which leads to a second receiving tank, No. 2; this tank to be used for the weak white liquor only. After the bundles of straw have been exposed to the action of the strong white liquor for a certain period, and by tests have shown that the outer enamelled fibre has sufficiently softened, the strong white liquor is run off to the receiving tank No. 1. Hot water is let in through the pipe shafting, and the straw washed of white liquor; the water passing through the outlet to the pipe leading to the weak white liquor receivin gtank No. 2. This is accomplished by closing off the valve in pipe leading to receiving tank No. 1. The weak white liquor is dumped back to a tank located near and above the digester, and used in cooking the straw.

After the bundles of straw have been washed of liquor, they are removed and placed on a conveyor leading to a combination of press and cutter; the weak white liquor issuing from straw due to pressure is returned to receiving tank No. 2, and the straw passed through the cutter and cut to length required, to be then conveyed on conveyors to digester bin. The over supply of used strong and weak white liquor is returned to the recovery plant, where the recovered soda ash is mixed with saltcake and dissolved to supply the quantity required for making of caustic soda.

The digesters used for cooking the straw should not be of larger capacity than two (2) tons, and should be on the revolving principle, so as to insure proper mixing of straw with liquor. The pulp is then blown off to the wash tanks, there to be thoroughly washed. After all the water has drained away, the pulp, which has to be of stiff consistency, is conveyed to Kollergangs and thence taken to the paper mill. This process can also be successfully applied to making of pulp of corn stalks, with some alterations to installation.

BRITISH TRADE NEWS

Special to Pulp and Paper Magazine.

London, June 2, 1913.

During the past few days a further stage was reached in the settlement of the demand of the employees of mills in the Lancashire district for time-and-a-half rates instead of time-and-a-quarter for week-end overtime labor. The majority of the employers have decided that they will grant the time-and-a-half rate for the week-end overtime from the 1st of June. This decision, however, has not been unanimous, and in mills where this rate is not to be adopted, the leaders of the men's unions have instructed the employees to communicate with the union headquarters. Consequently if the employers hold out there is sure to be more strife. The operatives in Scotland have also sent an appeal to the mill owners asking that the working week be from 6 a.m. on Monday to 1 p.m. on Saturday. So far no reply has been received.

The Castner-Kellner Alkali Co. have declared an interim dividend of 9 per cent., and Brunner, Mond & Co., Ltd., another alkali firm, have declared a dividend at the rate of 27½ per cent.

Messrs. Caldwell & Co.'s paper mill at Inverkeithing, Scotland, was destroyed by fire on April 24, and the estimated damage is £70,000. Three hundred hands are thrown idle. The mill was notable for banks, bonds, cartridges, ledgers and other high-class papers, in addition to grease, proofs and linen-faced goods. A fire also broke out at a railway siding at Kettlebrook Mills, in Tamworth, Staffordshire, and several hundred tons of wood pulp and newsprint were destroyed.

Messrs. Walmsley & Co., paper makers engineers, are busy building two machines for the Imperial Paper Mill at Gravesend in Kent. When completed these mills will have no less than eight Walmsley paper making machines working. Messrs. Walmsley are also installing at the London Paper Co.'s mill, at Dartford, a fine "printing" machine 108-in. wide for making high-class papers. Another interesting feature of Messrs. Walmsley's business is that they have no less than eight complete papermaking machines on hand and going through their works at present and they have orders on hand for cylinders 222 inches wide on face.

J. L. McNicol, who resigned his position as manager of the Barber Paper & Coating Mills, Ltd., Georgetown, Ont., has decided to interview parties in England who are interested or likely to be interested in Canadian pulp and paper before he leaves England for the Dominion. He is coming home on a short visit.

Mr. P. C. Collins, who has been with J. E. Salvesen & Co., Ltd., pulp men, has severed his connection with the firm.

ABITIBI STOCK ON MARKET SOON.

There will shortly be put upon the market by Murray, Mather and Company, of Toronto, and N. B. Stark and Company, of Montreal, an issue of $1,000,000 cumulative, convertible, seven per cent. preferred stock of the Abitibi Pulp and Paper Company, of which one-half the sum has already been taken up. The public will be offered the balance at ninety-five, with a fifty per cent. common share bonus. It is expected that the securities will readily be subscribed. The authorized capital of the Abitibi Pulp and Paper Company is $1,500,000, of which $1,000,000 is being issued. The authorized common stock is $3,500,000, of which $3,000,000 is being issued.

SIR EDWARD PARTINGTON — A CHARACTER SKETCH

(By Our London Representative.)

To speak of the Paper Makers' Association of Great Britain and Ireland, 1912 (Incorporated) and the members that belong to it, without reverently mentioning or recalling the name of Edward Partington, would be equal to robbing the "Merchant of Venice" of its title role. Like the great Antonio he is rich, but his generous self-sacrificing disposition and his greatness of heart in all else, makes him a man who calls for our sympathy and our admiration. Although we clearly see Edward Partington and feel we know him, as the generous friend, the noble benefactor of the paper industry, the kindest man in doing courtesies, yet he takes by no means a prominent part in anything, it being his nature to shirk prominence and obscure himself from publicity. As a man of the world he plays his part quietly and his name will go down to posterity as a



SIR EDWARD PARTINGTON

Retiring President of the Paper Makers' Association of Great Britain and Ireland.

thorough English gentleman of the good old school, shrewd, level-headed and keen.

When the announcement was made at the annual meeting of the Paper Makers' Association of Great Britain that Edward Partington had made a request that he be relieved of the office of president, it was felt that the severance was disconnecting another link with the past and it was received with the utmost regret, because he never presumed upon his superiority. Quick to think and act, with many of the noblest of qualities, he made an ideal chairman, and had his health been of a more robust character the British paper industry to-day would still be enjoying directly at all conferences in the capital his wise counsel and his prudent friendship. For a great many years Edward Partington has filled the position of president of the British Paper Makers' Association with dignity and discretion, and his practical working experience in all branches of paper making in his early days proved invaluable to him in guiding the destinies of the association at times when crucial events required the most careful handling that it was possible for a large employer to give.

As to the early days of Edward Partington it may concisely be said that he spent them at hard work and that is one of the reasons why he is looked up to and admired so much in the paper industry throughout the whole of the world. He always believed in practical workmanship and he always believed in being about the mill. Therefore, what he does not know to-day about pulp and paper is not worth knowing. Always of an industrial spirit, this is only natural of the man when one considers the fact that he emanated from the hub of industry. He was born in Bury, in Lancashire, in 1836, and at an early age was engaged in papermaking and went "through the mill," which at the present period has formed the backbone of his success. In conjunction with his friend, William Olive, he succeeded, after his early training, in bringing the Turn Lee paper mills at Glossop, to a fine degree of success, and as business progressed the Dover mills in the same town were acquired, and the output increased. Then the Broughton Bridge mills at Manchester were purchased and in these huge mills the practical knowledge of Edward Partington, as time passed on, became a valuable asset, and one outstanding feature of his career was the nose he always had for new inventions. He, as a rule, made himself acquainted with inventors and their inventions, and it is very doubtful if there is a man living to-day who knows more about it, or who has such a wide knowledge, of the question of wood pulp making in all its ramifications and bearings upon papermaking as has Edward Partington. Then, again, Edward Partington is managing director of the Kellner-Partington Paper Pulp Co., Ltd., and of Oliver & Partington, Ltd., and he is also interested in another Lancashire pape rmill at Ramsbottom, not to speak of his connections in Canada, Australia and Scandinavia.

Glancing back once more into the past, Edward Partington's policy reminds me of the old adage that "faint heart never won fair lady." If his heart or his foresight had been faint he would not have achieved the success he has. He is a pioneer in the introduction of wood pulp for papermaking and he has never been known to relax during times of difficulties in finding a way out when inventiveness, combined with energy and enterprise, were necessary. Always probing the question of wood pulp for papermaking and the prospects of the industry, he outlined his future policy from the early stages and that policy has brought grist to his mills. He has often spoken of the enjoyable time he had when as president of the Cushing Sulphite Fibre Co., he paid a visit to Canada in 1901 in connection with his wood pulp business. At that time he took a trip through the mills in the States, as well as those in Canada, and at a public banquet given in his honor in the Royal Hotel, in St. John, N.B., he said, what has become true, "Wood to-day is the backbone of the paper industry." He also reminded Canadians that the manufacture of their paper cost more than it did in Europe, but that high cost was compensated by the cheapness of the raw materials. For Canadian wood he predicted most glowing prospects, provided the question of conservation was attended to in forestry

matters. Needless to say, his wood pulp interests in Canada as well as in Scandinavia, are extremely large and lucrative.

One of the greatest honors, and perhaps the greatest recognition, that Edward Partington has ever received in his life came last year when King George V. conferred a knighthood upon him. The honor caused intense gratification amongst the British papermakers, because it was well deserved on account of what he did for the advancement of the industry and more particularly for the helping hand he had stretched out toward those less fortunate in life than himself. The name of Partington is associated with philanthropy in England. He has given a convalescent home to one place, a library and a hall to Glossop and bestowed numerous other benefactions of which little is heard. His strenuous commercial life—he is a director of several other concerns, such as the Manchester and Liverpool District Bank, besides being interested in pulp and paper companies—has never prevented him from becoming charitably disposed in a very quiet and unostentatious way. The moment a deserving case is brought to his notice, one may reckon on substantial help.

Sir Edward Partington, and his highly respected wife, Lady Partington, have two seats in England, one at Glossop and the other at Droitwich. The latter is a beautiful estate and formerly belonged to Lord Hampton. It cost £70,000 to purchase and covers 3,000 acres. Putting all things together Sir Edward is a striking example of a man who has never been turned by his phenomenal financial success. His friends in his youth are his friends to-day, and while others have been sitting on the rail and thinking about wood pulp problems, Sir Edward had them solved and his mills converting them into dividends.

FARM WOODLOTS

Rapid Increase in Value Through Timber Scarcity and U. S. Tariff Peculiarities.

With the increasing inaccessibility of the forests and the consequent high price of wood, the small wooded areas common on the farms of Eastern Canada are also increasing in economic value. They frequently occupy soils unfitted for agriculture and with a little care can be made to furnish the farmer with a continuous revenue in fuel, fence-posts, rails, poles and structural timber.

Unfortunately these woodlots are frequently allowed to deteriorate through carelessness or lack of knowledge on the part of the farmer. He takes great care to farm his agricultural lands to the best advantage, but often fails to realize that by farming his woodlot with the same care, he could get the same increase in productiveness. Cattle and weeds are not permitted in a wheat field, yet in the woodlot the cattle range at will, and instead of removing the weed trees the farmer allows these to increase in number, removing only the trees best suited to his purpose.

To save the farmer from himself, the Dominion Government has appointed a technical forester with headquarters at the Forestry Branch, Ottawa, whose principal duty is to answer all inquiries, and give free advice on these matters. If necessary, arrangements can be made for a personal inspection of woodland properties by this expert. No conditions are imposed on the owner of the woodland, it being assumed that he who is anxious for advice will accept it when given. The expert looks over the stand, determines what species of trees are best suited to the soil and to the local market, shows how to improve the character of the crop and its rate of growth by proper thinnings, and, if desired, gives advice regarding tree planting, hardwood coppicing, felling methods and the most profitable sizes to be grown.

Further information on this subject can be obtained by writing to the Forestry Branch, Ottawa.

STREAM AND RIVER IMPROVEMENTS

The necessity for the proper conservation of the water resources of the Dominion, and their utilization for the maximum benefit of the public has often been emphasized in these columns. We are prone, however, to neglect the placing of the necessary safeguards until it is too late, or until force of circumstances compels action.

Coal consumption is advancing at a rapid pace, so rapid, in fact, that complete depletion of the present available supply is only a matter of a very few years. We have not the figures to hand for Canada, but in the United States, in 1890, 2.54 tons of coal per capita were used, or a total of about 158,000,000 tons; in 1912, 5.73 tons per capita were used, or a total of 550,000,000 tons. It is certain that the increasing per capita consumption and the increasing population will deplete the supply at a much higher rate. The logical outcome will be that in a very short time, probably less than twenty-five years, the United States will prohibit the export of coal.

As Ontario has no coal resources of her own necessity will force the development of many of our water powers, which are to-day either too far from the market for commercial development, or too costly for economic use.

Water power development on a large scale is a product of recent years, and attention has often been called to this fact as the reason for its subservience to older institutions. We have grown firmly fixed in the habit of considering our streams as intended primarily for navigation, and are, therefore, prone to overlook the fact that in some cases a stream may have a higher utility as a source of municipal water supply or for irrigation or for power.

The ever-increasing demand for electric power must be met by the increased development of hydro-electric projects of greater capital cost. Water storage will be a necessary adjunct to many of these developments, and the public will then properly appreciate the value and importance of gauging records.

In a recent issue of Conservation, in referring to the dangers of over-estimation of available power, the following pertinent remarks are made: That engineers consider the problem simpler and easier than it really is; that they have not the necessary data, and that, lacking these, they have failed to acquire properly experienced judgment in such matters. This only emphasizes the need of governmental aid in providing adequate funds for the securing of continuous records of stream flow.

It is important to remember that streams can be put to many uses. The interests of navigation should only be given their proper weight in the matter of river improvement. Water power development, municipal water supply, irrigation supply, the reclamation and protection of flooded lands, and the other incidental uses of water must receive due attention if the maximum utility to the public is to be secured.

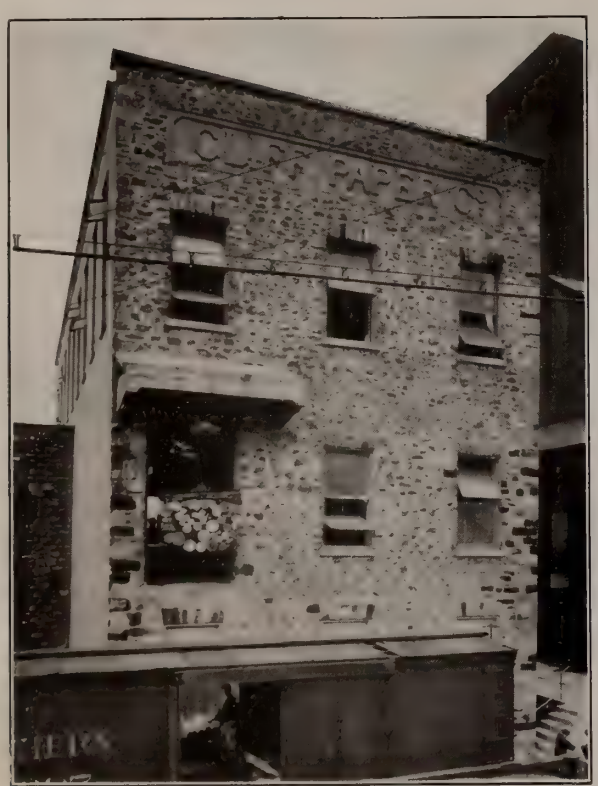
THE CLIFF PAPER CO., NIAGARA FALLS, N.Y., NEW PULP MILL

This new mill was opened recently, and through the courtesy of Mr. Arthur C. Hastings, the president of the company, the Editor of the Pulp and Paper Magazine spent the opening day at the plant.

The old pulp mill of the company, built about 18 years ago, is situated close to the water level and the power therefor gained by using the water which has driven the paper mill over again.

This scheme, of course, did not give the full efficiency of the water as would be the case with a modern water wheel using the full available head. Therefore, it was decided to utilize the water in the Hydraulic Power Company's wheel plant and have this company furnish the necessary power as electrical current.

The paper mill itself could be easily arranged for electrical drive, but the pulp mill had to be entirely built anew. The space available for a new pulp mill



(1) View of Ground Wood Mill

close to the mill was very small and measured only 38 ft. by 100 ft.

This space would not have been sufficient to build a pulp mill with old-fashioned grinders, but gave ample room by adaption of the Voith Magazine Grinder, the building also to contain the auxiliary machinery for a complete pulp mill.

The contract for the machinery was awarded to Mr. H. F. Storrer, C.E., at that time representing the J. M. Voith Engineering Works, Heidenheim, Germany, and now the manager of the newly incorporated J. M. Voith Company, New York, on June 27th, 1912. The building built entirely of reinforced concrete, was started in September by the Leonard Construction Company of New York. Cold weather delayed the construction of the building and the erection of the machinery could not be taken up before February. The plant could be started on the beginning of May, 1913.

Fig. 1 shows the front view of the mill and at the same time the unloading of the wood. The latter is delivered each day in such quantities, as necessary for grinding for 24 hours, saving thus much labor in handling the wood.

Three men are engaged during the day time in unloading the cars, they pile the sticks in a frame outside of the car, from where it is hoisted up by means of an electrical hoist to the second floor. One man attends to the hoist and fills the wood into the hoppers, the upper end of which is shown on Fig. 3. At the beginning of the night shift, the hoppers are completely filled and ground down till the next morning, when the charging is started again.

Fig. 2 illustrated the machinery at the basement. The two Voith's Magazine Grinders are connected by means of Voith's Ribbon Couplings to each end of the shaft of a 2,400 h.p. three-phase synchronous motor, running with 25 cycles and 12,000 volts. The motor is only protected against spray water by means of a wooden shield on each side of the motor. The high tension could be applied without danger, as the grinder produces very little steam.

The Voith Magazine Grinder is equipped with two presses, opposite each other. The buckets are open on the top and fed by gravity from the hopper. Each press is connected to a large hydraulic cylinder, which draws the press back as soon as the wood is ground up. This motion is done automatically and needs no attention.

The pressure necessary is produced by a high pressure centrifugal pump with two staged, direct connected to a direct current motor, as shown in Fig. 4. From the first stage water at a low pressure is taken off and fed into the air vessel. This low pressure is used for reversing the presses, where a larger quantity of water is used at a low pressure, but in a very short time.

The second stage furnishes water at a high pressure for the actual grinding. Before it reaches the cylinders it has to pass a valve controlled by an electrical governor, Fig. 5. This governor is influenced by the current consumed by the grinder motor and tries to keep the load of the motor almost uniform as illustrated by the diagram Fig. 2, showing the KW. consumed.

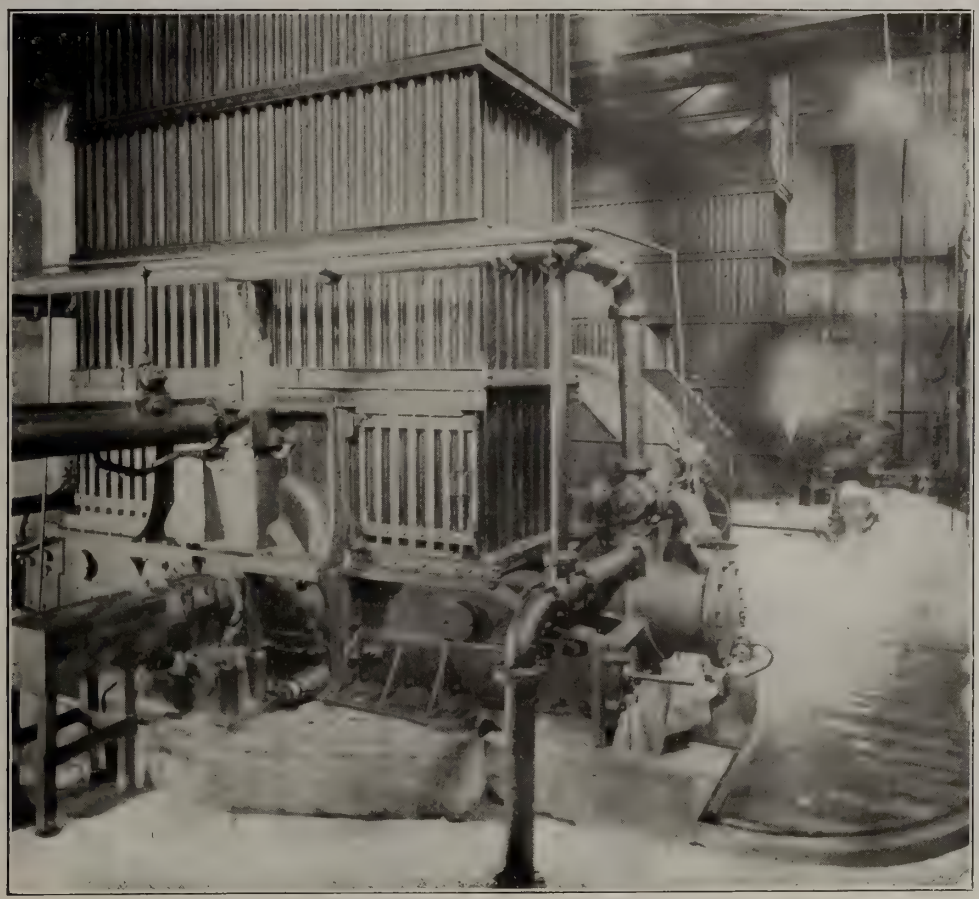
Fig. 2 also shows the sharpening machine mounted on top of the grinder and moved across the stone surface by means of a hydraulic pressure cylinder. This arrangement allows an easy dressing of the stone which is an absolute necessity for procuring a good class of pulp.

Returning to the automatic control of the presses, each one is equipped with a gearing device, which turns the reversing cocks mounted upon the pressure cylinders. All four devices are connected together in such a way as to allow the reversing of only one press at the time.

The grinder shaft carries stones of 67-inch. diameter and 54-inch. width, between two bronze bushed cast steel disks of special design. The shaft runs with 214 revolutions per minute in two heavy babitted ring oiling bearings with water cooling device. For changing the stones the upper part of the hopper is hoisted up to allow the travelling crane to pass over the grinder.

Cliff Paper Co.

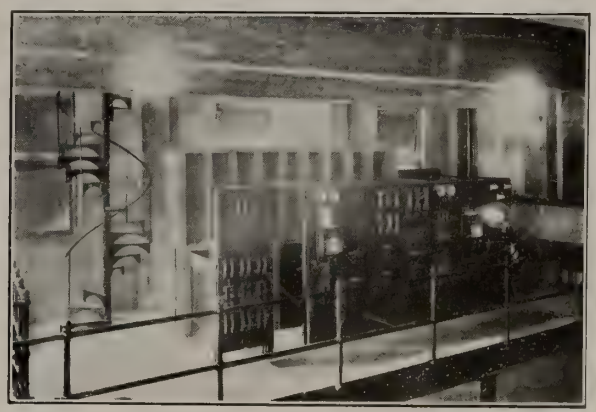
Niagara Falls



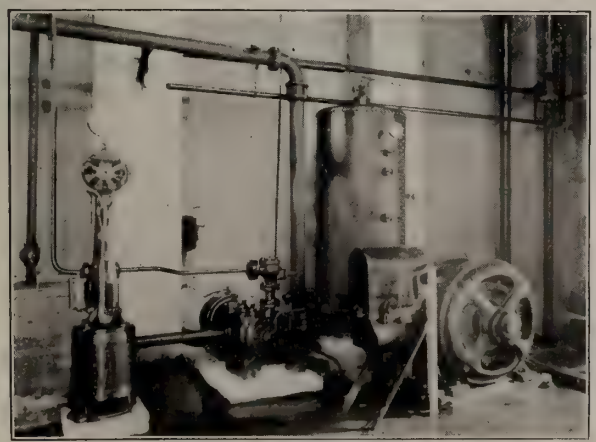
(2) GRINDER ROOM SHOWING VOITH MAGAZINE GRINDERS



(3) LOADING FLOOR



(4) SWITCH BOARD



(5) PRESSURE PUMPS



(6) VOITH DECKERS

The lower part of the magazine with all the machinery connected with it is taken up by the crane and put aside until the new stone, which is held ready on a spare shaft is laid in the bearings. The changing can be easily done on a Sunday.

The pulp is led in a pit to the Voith's automatic sliver catcher, which cleans the pulp of all slivers. This sliver catcher has a shaking motion diving at the same time into the pulp water, revolving shovels throw the slivers out. The sliver catcher is visible on Fig. 3, and has an individual drive by an electrical motor.

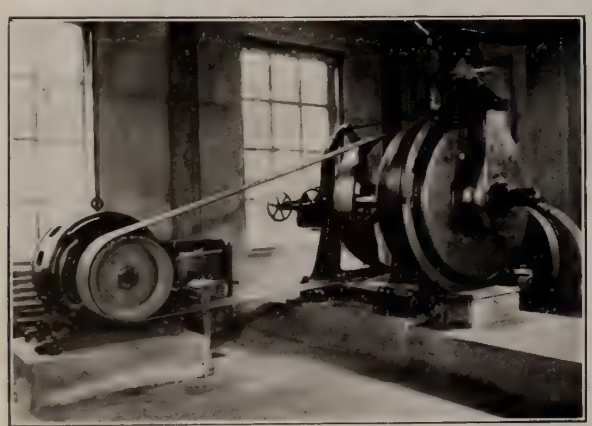
In a pit shown on Fig. 5 are two pumps installed. mounted on a common base plate. The pumps are driven by means of belt by one electro-motor. One of the pumps furnishes the fresh water and the other lifts the pulp up to the upper floor (Fig. 6) where it passes first a sand catcher and afterwards through a suspended channel to the Voith rotary screens.

The screens discharge the finer pulp into a channel leading to the slush machines and the tailings into a chest placed below the screens and equipped with an agitator.

From this chest an electrically drive nrefiner, shown on Fig. 7, is fed, which grinds the tailings and discharges same into the sliver catcher at the basement.

The four slush machines on the ppuer floor discharge the drained pulp into a chest laid between and also equipped with an agitator. From this chest a pipe line leads to the beater room, where by means of valves each beater can be charged directly.

The upper floor contains, furthermore, two wet machines for taking off superfluous pulp in the form of slops. The slush machines as well as the wet machines discharge their white water into a tank running below the machines, from where it is taken for feeding the spray pipes and diluting the pulp. Part of the white water is pumped by means of a pump direct connected to an electro-motor and shown on Fig. 3, and to be used at the rotary screens. The superfluous white



7—Voith Refiner

water runs over two existing decker machines and only when altogether free of pulp is lead into the sewer.

The leading points under which the mill has been built are:

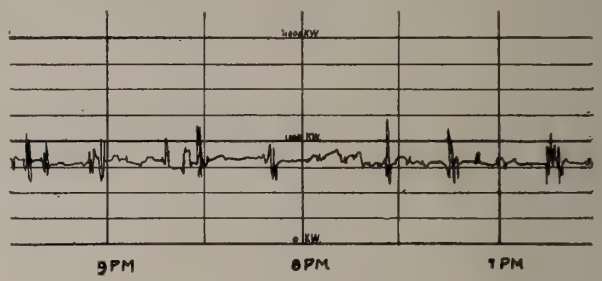
1. Saving of labor.
2. Saving of power.
3. Saving of waste.

1. During the day shift the mill has one man on each floor and a foreman for general control and dressing the stones.

At night when the charging of wood is cut out, there will be no man on the charging floor.

2. The plant has already shown that it makes a ton of pulp with a little over 50 h.p. per ton in 24 hours.

3. All the wood entering the mill is turned into paper, except the slivers from the sliver catcher, the amount of which has not been found sufficient to carry upstairs to be ground over again. These facts speak for themselves and show that the plant is able to work with a high efficiency, which easily justifies the higher



8—Power Curve

cost of installation. A further proof of the superority of such installments is the fact that the J. M. Voith Engineering Works, Heidenheim, Germany, already have sold 95 Magazine Grinders, more than 1,000 Rotary Screens, and about 600 Refiners.

The electrical machinery has been furnished by Allis-Chalmers, Milwaukee, and Fig. 7 shows the switchboard, placed on an elevation in the basement and from which all the power also for the paper mill is distributed.

Two graphic KW meters show on diagrams the power consumed by the Grinders and in the mill itself.

ROBERT S. HALL APPOINTED GENERAL SUPERINTENDENT.

Mr. Joseph Porritt, general superintendent of the Jonquiere Pulp Co., having recently resigned, as was announced in the columns of the Pulp and Paper Magazine, is about to sever his connection with the firm. Last week Mr. Wm. Price, president, appointed Robert S. Hall, day superintendent, to the new position of general superintendent of the Jonquiere Mills.

Mr. Hall came to Jonquiere three years ago as night superintendent under Mr. Oswald Porritt. About a year ago he was appointed day superintendent, and will now be given complete charge of the plant. Mr. Hall has been with some of the best Canadian mills since coming from England a number of years ago. He is a man of a most pleasing personality and thoroughly familiar with the manufacture of pulp and paper and with Canadian industrial conditions. There is no doubt that under his management the Jonquiere mills will show very fine production records.

We extend our warmest congratulations to Mr. Hall on this new position and feel sure that the Jonquiere Pulp Co. has secured an excellent general superintendent.

THE GLOBE.

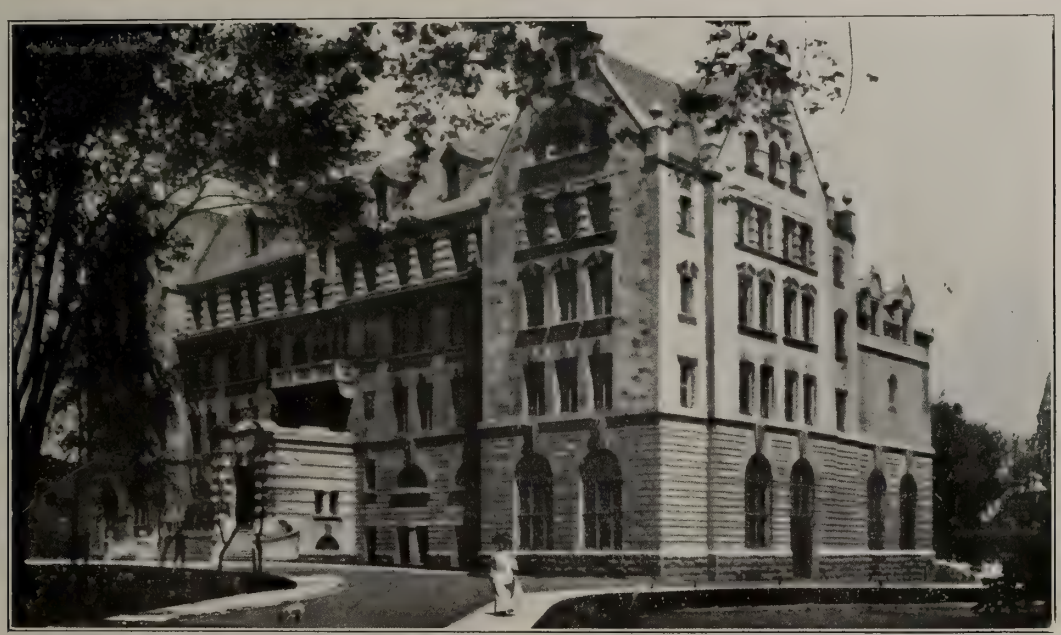
At the annual meeting of the Globe Printing Company, held in Toronto on June 10th, the reports presented covering the past year were very satisfactory. The net gain in circulation during that period was almost $5,000, which gives the Globe the largest circulation of any morning daily in Canada. The following directors were re-elected: President, Hon. Robert Jaffray; Secretary, W. G. Jaffray; Directors, Sir George Ross, A. F. Rutter, G. Tower Fergusson and P. C. Larkin.

CANADA'S NEW FOREST PRODUCTS LABORATORIES

Outline of the Work and Objects

By R. H. CAMPBELL, Dominion Director of Forestry

Since Hon. W. J. Roche has taken charge of the Department of the Interior he has been giving careful consideration to lines in which departmental work might be developed and made more useful to the public, and he has shown his foresight in the matter by providing for a very important development of the work of the Forestry Branch. The prime object of forestry is to manage the forests and their products so as to reproduce them and to use them as efficiently and economically as possible. For this purpose provision is being made within the jurisdiction of the Department for the protection of the forests from fire, for eliminating waste in lumbering operations and for educating public opinion to co-operate in these objects.



Engineering Building, McGill University, Montreal, which will provide accomodation for the Wood Testing Laboratories.

To completely fulfil the objects of forestry it is necessary to go further and investigate the possibilities of conserving our forests by reducing waste in manufacture, by prolonging the life of forest products used in construction, and by developing uses for products now wasted for the lack of knowledge as to how they may be employed. Forest services in older countries have felt the necessity finally of undertaking scientific investigations of such matters. Such work has been carried on in Germany and other European countries, in the United States and in some of the other British dominions, and where it has been undertaken it has appealed strongly to those engaged in manufacturing who have given it every assistance and even material support. The various classes of investigation to be undertaken will be as follows:

Timber Tests.

Timber testing with the object of determining the strength and other properties of wood so as to arrive at a rating table for commercial woods. Much has been done by the United States Service in this line which is available for Canada, but there are questions that are peculiarly our own and that we should test for ourselves. Such a question and one in which the lumbermen of British Columbia are certainly interested at the present time, is the relative properties of British Columbia fir and southern yellow pine, which meet each other in the Eastern Canadian market.

Timber Physics.

It is the business of the section of timber physics to study the structural and physical properties of wood and to ascertain how these properties are affected by different methods of drying and handling. This section also includes microscopic investigations of wood structure.

Wood Preservation.

The lengthening of the life of timber used in construction work is important and becoming more so as timber supplies become scarcer. Poles, posts, ties, bridge timbers and others are affected. The United States Forest Service are investigating the question from two sides: First, the study of the growth of fungi of various species in different timbers; and, second, the investigation of wood preservatives and of methods of impregnating the wood.

Wood Distillation.

This section studies what products, such as alcohol, turpentine, wood creosote and acetates can be obtained from wood by distillation and the best processes for obtaining them. There is a great deal of waste ma-

terial that might be used for such production if proper processes are developed.

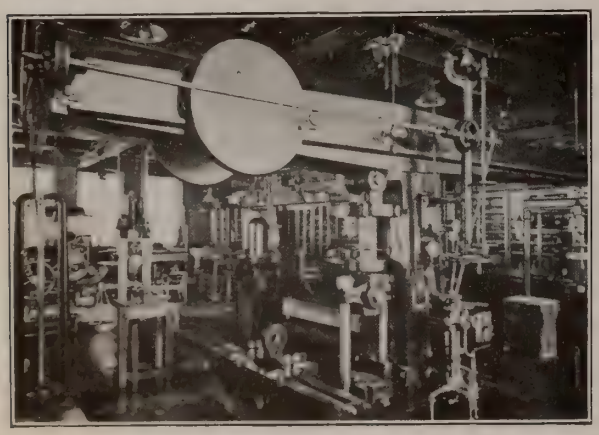
Wood Pulp.

The special problems that this section is dealing with at present are (1) methods of making ground wood pulp to determine whether or not commercial pulp can be made from species other than spruce; (2) the practicability of treating different woods with the



Chemistry Building, McGill University, Montreal, which will house the Pulp and Paper Laboratories,

sulphite and soda processes; (3) the qualities of paper which can be made from different grades of the various sulphite, soda and ground wood fibres; and (4) the practicability of using different forms of wood waste for the manufacture of wood pulp and other fibre products. Wood pulp and paper will be one of the largest industries in Canada and the problems that affect them of vital interest to the country.



The Machines for Timber Testing

To take charge of this work the Minister of the Interior has selected Mr. A. G. McIntyre, Editor of the Pulp and Paper Magazine, and Acting Secretary of the Pulp and Paper Association. Mr. McIntyre is a graduate of Acadia University, Wolfville, N.S., where he took the degrees of B.A. and B.Sc., and he also graduated from McGill University in Chemical Engineering with the degree of B.Sc. In addition to the chemical engineering course, he took the studies in hydraulics, strength of materials, mechanical engineering, etc., of the civil engineering course. He was chemical engineer for the Jonquiere Pulp Company, and engineer on construction for Price Bros. at the New Kenogami Paper Mills, Kenogami, Que. The work will be carried on at present in co-operation with McGill University.

NEWFOUNDLAND NOTES

Special to Pulp and Paper Magazine.

The S.S. Marina reached Botwood in good time, having made a very good run from Glasgow. She brought a quantity of coal and other supplies for the Anglo-Newfoundland Development Company's mills at Grand Falls. The Marina will load paper and pulp for Manchester.

The S.S. Kaslalia, of the Ronaldson Line, on the way to Botwood for a cargo of paper and pulp for England, met heavy Arctic ice off the East Coast of Newfoundland. In an effort to work through the floe she had nine plates damaged and had to go to St. John's, Nfld., to dock for repairs. The Kaslalia had on board a quantity of coal and china clay for the Grand Falls Works.

Jas. Berwick, mechanical superintendent of the Anglo-Newfoundland Development Co., spent a short vacation at his old home, Berlin, New Hampshire, and has returned to his post of duty at Grand Falls.

H. D. Reid, general superintendent of the Reid-Newfoundland Company, is also vice-president of the Labrador Pulp & Lumber Company, located at Hamilton Inlet, Labrador. This company have two large saw mills at work and have started the erection of a pulp mill at the Inlet that will have a capacity of 90,000 tons yearly. It is also the intention of this company to erect a mill at Sandwich Bay, with a capacity of 50,000 tons yearly; but hopes first to have some output from the larger mill. The British Wall Paper Company has already contracted to take the greater part of the product of both mills.

The A. N. D. Company had 1,100 men in the woods cutting pulp wood for the Grand Falls mills for three months.

The yearly duty on the imports of the pulp and paper mills at Bishop Falls and at Grand Falls amount to about $150,000.

The season has arrived when forest fires are usually more or less in evidence.

The adoption in this country a few years ago of a system of fire rangers has contributed considerably towards the reduction of the yearly havoc of forest fires. These rangers daily cruise the danger zones, put out fires caused by the railway, lightning or other means, and apply general vigilance upon all campers, etc. It is estimated that one forest fire alone a year or two previous to the appointment of the fire rangers, destroyed a million dollars worth of timber and other property. Along the line of railway through the country, what a few years ago was densely forested with heavy fir, spruce and pine timber, is to-day in many instance nothing but charcoal, the results of forest fires. The country, however, yet retains some magnificent tracts of timber suitable for lumber or pulp, and it is to save these that the ranger system has been adopted, and so successfully carried out.

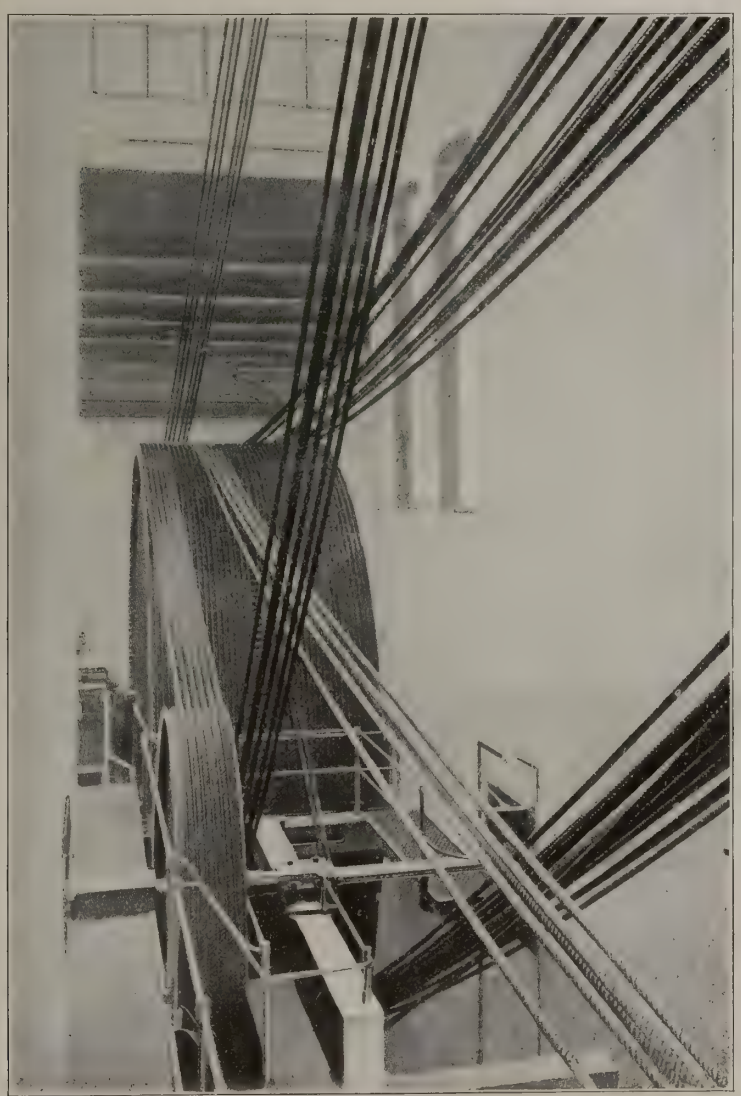
THE TRANSMISSION OF POWER BY COTTON ROPES

By E. EDWARD HART, M.A.

A Paper Read Before the Association of Engineers-in-Charge

The method of transmitting power from one pulley to another by means of ropes is generally termed rope driving. The rims of the pulleys are specially grooved to receive the ropes, and the power is transmitted by means of the frictional resistance between the rope and the pulley groove.

There are two systems in use: (1) The American or continuous system, where one long rope is wound continuously around both driving and driven pulleys, the last wrap being carried across the width of the pulleys back to the first groove by a carrier pulley set at the required angle. This is extensively used in America, but rarely found elsewhere; (2) the English or separate rope system, where each rope on the driving pulley runs straight and true into its corresponding opposite groove on the driven pulley. This is by far the commonest practice, and is the one to which I shall confine my attention.



Rope-race in a Modern Mill.

For main drives, both three and four-strand ropes are used, and usually vary from 1-in. to 2-in. in diameter; but on small fans and fast-running textile machinery, smaller bands and ropes, between ¼-in. and 1-in. diameter, are more suitable. The rope-speeds most frequently employed are from 2,000 to 5,000 feet per minute.

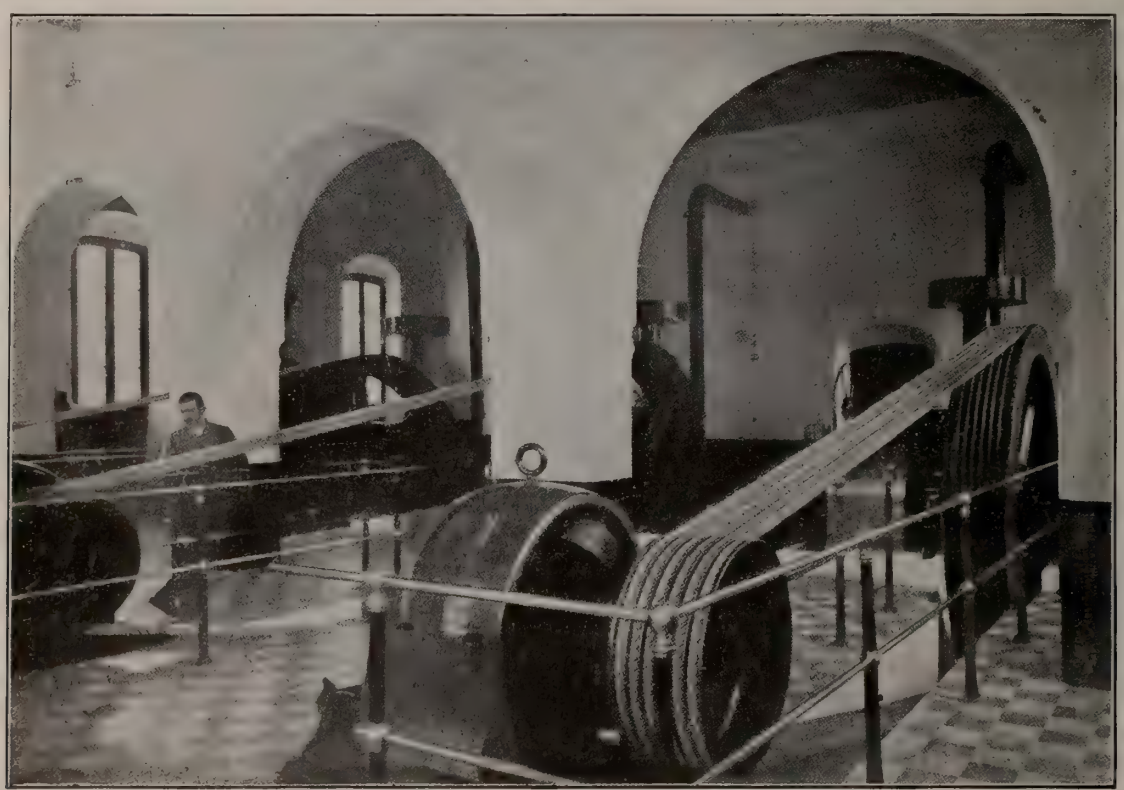
The earliest ropes used for power transmission were probably of leather or hemp, and though there are one or two instances of main drives on record in the early years of the nineteenth century, it was not until about 1860 that Messrs. James Combe & Co., of Balfast, introduced rope driving for large powers. From Ireland the system spread to Scotland, and in a short time it was well known and used by the manufacturers of Lancashire and Yorkshire. Leather ropes were soon discarded owing to their expense and the difficulty of their manufacture and hemp ropes took their place. This was probably due to the fact that hemp was easily

obtainable in Belfast and Dundee, being largely cultivated in those districts.

Although several hemp driven ropes are running today, owing to the harsh nature of their fibre it was soon discovered that for power transmission, ropes made from cotton gave far better results. It is probable that from the very first cotton bandings or small plain laid ropes were used for driving the cotton-spinning frames in the Lancashire mills. Certain it is that my grandfather, who died in 1861, had been making them for many years. But the idea of driving a whole mill with ropes by having the engine flywheel grooved for their reception does not seem to have been adoptd in Lancashire and Yorkshire until about five or ten years after this date. Even then ropes like the ones used in Belfast and Dundee were used at first, as they were purchasd, probably, along with the engine. In the heart of the cotton-spinning district the change from hemp to cotton was not long in coming. And when once cotton ropes had been properly tried, their marked superiority was at once so apparent that they almost immediately displaced hemp ropes for power transmission. And to-day, with one or two notable exceptions, cotton ropes have entirely superseded hemp ropes for transmitting power in every part of the world where rope drives are to be found. And though they were only used at first in textile factories, the superior pliability of thec otton fibre has led to its adoption in mills and works of every description.

As years went on, the advantages of the system were more and more recognized. In connection with steam engines, gas engines, oil engines, and water and steam turbines, it was found that large mills several storeys in height could be easily driven from one prime mover, and that power might be transmitted to shafts over 100 feet away, without the use of long lines of heavy and expensive shafting or gearing.

The stopping of a mill owing to broken gearings is now practically unknown, and it is only necessary for one to have had the experience of working in close proximity to a large geared engine to appreciate the absolute noiselessness of a well-designed rope drive, and its freedom from vibration. As regards first cost and maintenance, a rope installation is very much cheaper than leather belts, or shafting and gearing, and where space is a consideration, it is often possible to put up a successful rope drive where there is literally no room for any other system. Electrical engineers have found it very useful in adjusting velocity ratios of shaftings, as, by using rope drives they are enabled to use higher speed, and consequently lower-priced motors. Besides this, ropes will transmit a large temporary overload without slipping, and it is possible to greatly reduce capital charges by driving a series of machines, or lines of shafting, from one motor.



Three Sets of "Lambeth" Ropes Driving Dynamos from Gas Engines in Spain

The resilience of ropes, too, is found to considerably reduce the wear and tear of machinery, and they are being more and more used in steel rolling mills, cement works, and rubber factories, where sudden and severe overloads are constantly being met with. Another advantage is that, with the English or separate rope system, should a rope show signs of wear, it can be removed during the dinner hour without causing a stoppage of the mill, and can be respliced at any convenient opportunity, say the end of the week, without any excessive strain being put on the rest of the ropes. Rope gearing is also more positive in its transmission than belting, and consequently no allowance need be made for slip.

The Loss of Power in Rope Transmission.

Several experiments have been made from time to time to ascertain the loss of power in driving with belts and ropes, and to compar their efficincies.

(a) In Vol. CXVI of the Minutes of the Proceedings of the Society of Civil Engineers, some tests made by Mons. Fauguier show that belts are 2 per cent. better than ropes. But he used ropes 1 9-16-in. diameter on a pulley 2 ft. 10¼-in. diameter, and ran them at the excessive speed of 5,376 ft. per minute, and could not, therefore, expect to get good results from the ropes.

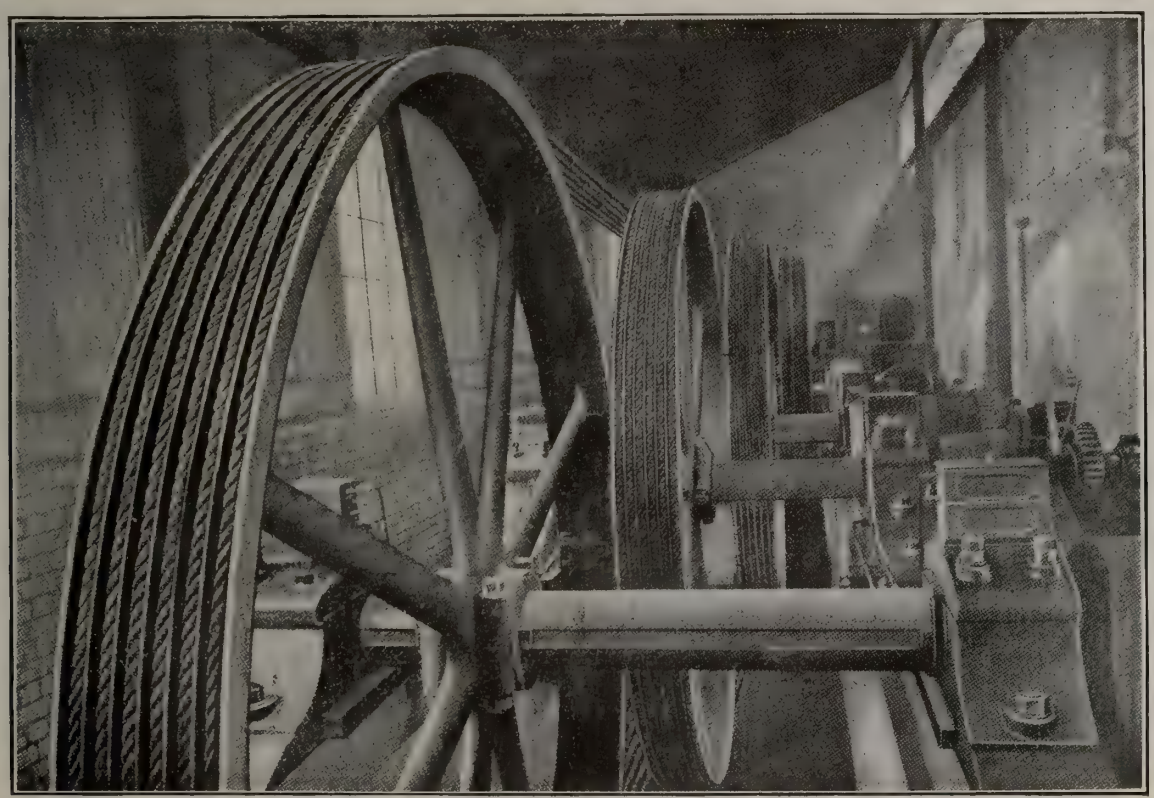
(b) In the well-known experiments made at Lille in 1894, Manilla ropes 1¾-in. diameter were tested against belts, and at a speed of 4,000 feet per minute it was found that there was less slip with the ropes than with the belts, but that the difference between the efficiency of belt and rope-gearing was inappreciable. Unfortunately, these tests were not as complete as they might have been.

(c) In a more recent test of a 150 h.p. motor, running at 900 revolutions per minute driving spinning frames, the total electrical power developed by the motor was 119 h.p. during the period of the test. This was found to be expended as follows:

In motor	12½	h.p.
In main driving ropes	1½	h.p.
In net shaft friction	6	h.p.
In belts to machines	7	h.p.
In machines	92	h.p.

In these three instances, the ropes used were not all made of cotton, though probably they were so in the first and last cases mentioned.

(d) A series of experiments was undertaken a few years ago by Prof. Ewing to ascertain what loss occurs in the transmission of power by ropes through the work which is expended upon the rope itself. The work is spent partly in bending and unbending it, and partly on getting it into and out of the grooves of the pulleys on which the rope runs. The ropes tested were the Lambeth Cotton ropes, four-strand, of 1-in. and 1¼-in. diameters, and they were both run on pairs of 2 ft. 6 in. and 3 ft. 6 in. diameter pulleys. One pulley was slung vertically under the other in a lever frame, so that any desired tension might be set up in the ropes by adding weights to the lever arm. The system was driven by an electric motor set on a cradle dynamometer through a fine endless band, and the resistance R due to the jamming of the rope in and out of the grooves, and also that due to the bending and unbending of the rope, was measured by the weights required to be applied to a lever arm on the cradle dynamometer to prevent it from tilting. A fine and very flexible cord was first substituted for the rope, and a preliminary series of experiments made under various speeds and loads. The readings obtained corresponded to that part of the resistance due to axle friction, air resistance of pulleys, and the imperfect elasticity of the band driving the system from the motor. These values were deducted from those observed when the rope was in action. A series of values of R (the resistance in lbs.) and S (the static tension in the rope) was taken for both diameters of rope on both sets of pulleys. And it was found that when these values were plotted out on squared paper the values of R in relation to S at any one speed were represented by a straight line. The experiments showed that R increases with the speed, by amounts which are proportional to the increase of speed (within the limits tested). Hence it is easy to infer the values of R for higher speeds if we assume the same law to hold good. It was noticed, too, that of the whole work expended on the rope, a large part depended on the tension. This indicates that the work of jamming the rope into the groove and pulling it out again is relatively large, and that this constitutes an important source of loss of power in



View of a Heavy Service Drive

driving by ropes. The results showed that at any given speed and for any given pair of pulleys, R increases at a uniform rate when the tension is increased. The resistance is made up of two terms, a constant (independent of the tension) and a term proportional to the tension. So that a formula $R = a + b\,S$ is applicable to all cases (a and b being constants). Further, a and b depend upon the speed, and they both increase in a uniform manner with increase of speed. Further, both a and b are greater for the thicker ropes on the same pulley. They are also greater for the smaller pair of pulleys, when the same rope is tested on pulleys of different diameters.

For a 1-in. diameter rope on a pair of pulleys 3 ft. 6 in. in diameter, at a speed of 4,950 ft. per minute, $R = 0.57 + .0101\,S$.

For a 1¼-in. diameter rope under the same conditions as to speed and pulleys, $R = 1.16 + .0112\,S$.

In applying these formulae to practical cases in which the tension is different on the two sides of the rope, Prof. Ewin says, "It appears proper to take S as the greater of the two tensions, for this determines the extent to which jamming of the rope into the groove will take place."

To find the actual percentage of power lost on any given drive. Take, for example, this 1-in. diameter rope running at 4,950 ft. per minute on a pair of pulleys 3 ft. 6 in. in diameter with a static tension S of 100 lbs. Then $R = .57 \times .0101 \times 100 = 1.58$ lbs.

To find the gross tension in the rope, we must add the centrifugal tension set up in it at this speed to the static tension, which in this case equals 59 lbs., so that the gross tension would be about 159 lbs. Prof. Ewing goes on to say: "From such data as I have been able to obtain, it appears that a 1-in. diameter rope, under these conditions, will generally transmit an effective driving force of about 70 lbs., corresponding to 10.7 h.p. Hence, the percentage of power lost is $\frac{1.58 \times 100}{70}$ or 2¼ per cent." A similar calculation shows that a -¼-in. diameter rope, under exactly the same conditions as above, loses about 2¾ per cent. of the power transmitted. These results agree reasonably closely with the empirical formula of Prof. J. J. Flather, of Purdue University, for losses due to bending in hemp ropes, which embodies the ideas of Eytelwein and Reulaux on the same subject, viz., that $R = \frac{34}{100}\,P$, provided that the diameter of the smallest pulley is not less than 30d. For a 1-in. diameter rope, this gives R = 3 per cent. of the driving force.

It will be seen from these results that, provided the pulleys are of reasonable diameter, and the rope is properly constructed, there is no need to take into account any losses of power due to the rope itself. But if, on the contrary, ropes are set to work around very small pulleys in relation to their diameters, or made to work out of their natural position by means of guide pulleys, or turned round corners, or compelled to make reverse bends, the loss of power is very great. The use of small pulleys is in most cases influenced by the velocity ratios required; but it should always be borne in mind that, besides the power lost in each rope by the reduction of the arc of contact on the small pulley, there is also a large percentage of power lost by bending the rope round such a small arc. How severe this bending is may often be seen by the comparison of the interior of a rope that has been working sometimes for only a few hours round a small pulley, with one that has worked for years on a properly-designed drive. Whilst the yarn in the latter is as good as on the day it was put in, the inner strands of the former are broken



A Drive Showing Twenty Single Strands.

up into short pieces, cut clean in two as if with a knife. By altering the turns or construction of the rope, it is often possible to considerably improve the life of a rope on such a drive; yet when all has been done that can be done, the state of the rope when it is taken off clearly shows how great an amount of power has been wasted, i.e., expended in destroying the rope, instead of being transmitted to the driven pulley. In many instances, of course, there are insuperable difficulties in the way of a good drive, and the ropemaker has to do his best by careful fitting of the grooves, trying different types of rope, etc., to make the drive a success. But frequently, by a little forethought and "judicious dodging," the engineer-in-charge may change a very awkward drive into a very passable one.

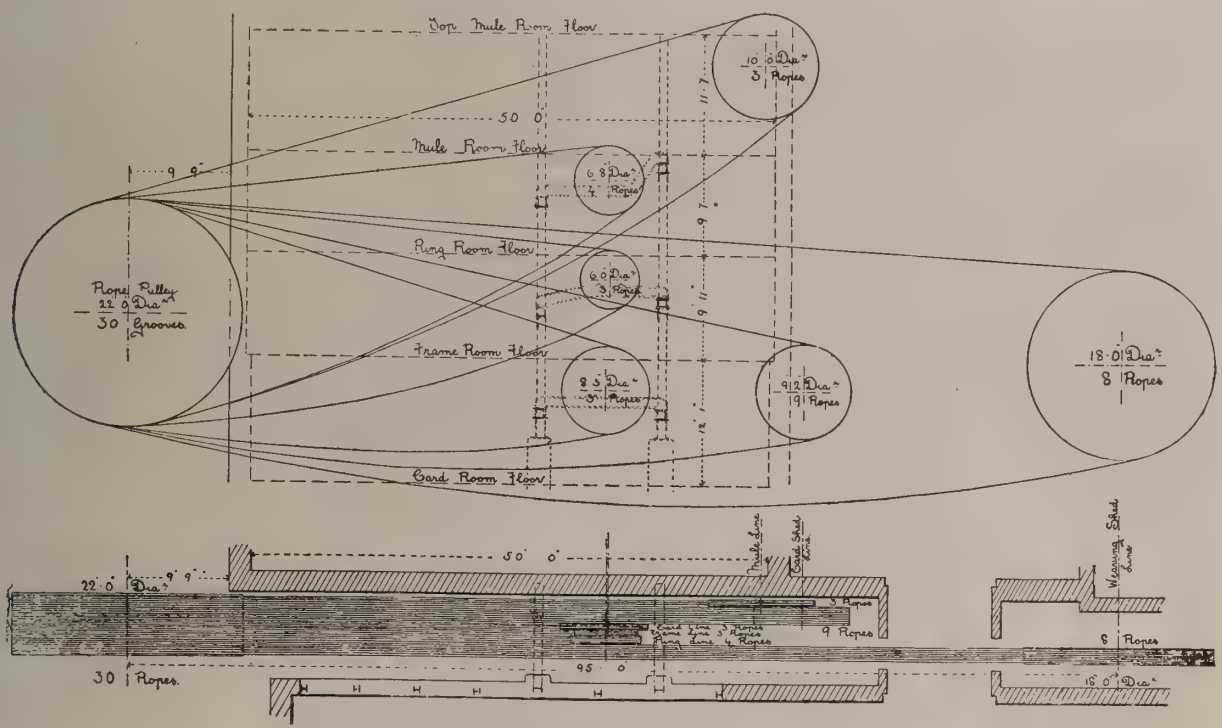
Ideals of a Rope Drive.

Though not always attainable, the following conditions should be aimed at by any one desirous of a satisfactory rope installation. Let the pulleys be not less than 30 times the diameter of the rope used, let them be equal in diameter if possible, and as large in diameter as may be, their ratio not to be greater than 5 to 1. Aim at having a distance of not less than 25 ft. between the pulley faces, and the drive horizontal, with the slack on the top side. Speed to be from 2,000 to 4,000 ft. per minute. Give about 4 to 6 ft. clearance under both sides of the rope, taking great care that the ropes have no chance of rubbing against anything. Allow 2 or 3 inches clearance between the bearing foundations and the sides of the pulleys, so as to leave the rope splicer room to get the ropes on without damaging them. See that the pulleys are in line, true, concentric, and balanced, that their grooves are all exactly alike, and that the ropes are of the same diameter. Do not overload the drive, and see that the engine runs steadily, and that the load is an even one. Avoid, where possible, the introduction of gear wheels between the prime mover and a rope drive. Do not let the ropes get wet, let them be properly lubricated, and do not have them too light. Put all the ropes on at one time, and pull full load on them as soon as reasonably possible after they are fixed. Get an experienced rope-splicer to splice and fix the ropes, and avoid the use of carrier pulleys, rollers, and angular drives as much as possible. Speaking generally, it is possible to comply with all, or nearly all, of these conditions. And where this is the case, the mill engineer often forgets, for many years, all about his ropes, as they give him no trouble. There are drives, however, which present difficulties to those who have to deal with them, and although I do not wish to unduly emphasize them, as they are of comparatively rare occurrence, yet a few hints as to their solution may not be out of place.

Difficulties of Rope Driving and Their Solution.

Fraying.—If ropes show signs of undue fraying, in nine cases out of ten they are rubbing on something in their flight. They may only touch the obstacle at stopping or starting time, but wood or stonework rubbing on cotton quickly wears the latter. I have seen drives where there was apparently 4 ft. of clearance when the ropes were running, yet at starting the slack side would come round and touch the wooden floor of the wheel race. If this is not the cause, it may be due to a fracture or roughness in the pulley, or the pulleys being out of line may cause the rope to rub on the flanges. Sometimes it is caused by slipping; this will soon show itself by the pulleys heating. The cures for fraying are obvious. Any slight fraying caused by ordinary wear may be alleviated by using a good anti-fraying composition.

Excessive Stretching.—The usual cause of ropes stretching too much is their getting wet. In bleach works and paper works it is often difficult to keep the ropes dry, and sometimes ropes have to work partly in the open air, and so are exposed to rain. The primary effect of a wetting is to tighten up the ropes, but afterwards they continue to stretch for some time and often



Sketch Plan of Rope-race in a Lancashire Mill.
30 Ropes, 1⅜ in. diameter, on Fly wheel.

it is necessary to tighten up a set of ropes two or three times before the trouble due to a soaking can be eliminated. If ropes have to work out of doors, or in a damp place, it is advisable to have them specially waterproofed, as the waterproofing compound not only prevents the damp from rotting the cotton fibre, but greatly minimizes the stretch due to the action of moisture on the rope.

Hot Necks and Tightness of Ropes.—We are sometimes blamed by engineers for putting on ropes too tight, and causing hot necks; occasionally I think the blame rests, not on the rope-splicer, but on the engineer, who has either not provided long enough bearings, or who is overloading his drive. As you will have gathered from what I have said previously, when a rope has to transmit a heavy load, it must be fairly tight to prevent slipping. Sometimes this load is caused by a tightly screwed-down bearing, or a shaft out of line. The way to avoid hot necks is to be careful not to overload the ropes, and have long bearings. It is easy to put in one or two more ropes than are actually required; the ropes, then, need not be put on so tight, and will not cause such friction in the bearings.

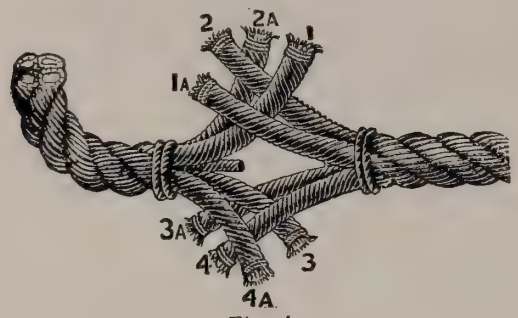


Fig. A.

On the other hand, we are now and then blamed for putting the ropes on too slack. The question of how tight ropes should be put on depends upon circumstances. It is best to have the ropes on at such a tension as they will just do the work without slipping, for the tighter a rope has to be the shorter its life. When new ropes are being fixed the splicer must use his own judgment as to the tension, bearing in mind the strength of the shafts and bearings. It is often cheaper to have ropes tightened after they have been running a short time, than to risk bending a weak shaft, or damaging the ropes in putting them on.

Differential Driving.

It is important that all the ropes on any one drive should be of the same diameter. If the driver and driven pulleys are equal in size, then it does not much matter. But where one pulley is larger than the other, the smaller ropes sinking deeper into both grooves, attempt to give to the driven pulley a slightly different speed than the thicker ropes, and uneven driving and friction is introduced. Where, as is usual, the larger pulley is the driver, the small ropes are doing more than their fair share of the work; where the smaller pulley is the driver, practically all the work falls on the thicker ropes.

Bouncing Ropes.

Occasionally one hears of engineers who are troubled with ropes jumping off the pulleys, or the ropes when running cause them much uneasiness by their undue surging or swaying. In almost every case the cause of the trouble is due to the design or construction of the plant, and quite outside the rope-maker's province to cure, however anxious he may be to make the drive a success. The following are generally found to be the causes of ropes bouncing:

(1) Pulleys out of line with each other, although they may be true and concentric.
(2) Pulleys out of truth.
(3) Pulleys eccentric.
(4) Pulleys not balanced.
(5) Varying speed of engine, due to bad governing or want of weight in the flywheel.
(6) Fluctuating heavy load, e.g., driving a steel rolling mill, or in the case of a steam engine and water wheel working on the same shaft, one will occasionally overrun the other.
(7) Ropes flapping against something in their flight.
(8) Bad splicing; the rope should be no thicker at the splice than in the rest of its length.

In addition to the above, there are several other conditions which, whilst they are not in themselves the sause of ropes leaving the grooves (as is sometimes erroneously supposed), yet accentuate the cause given above, viz.:

(1) Ropes being too slack. As long as they do not slip, ropes may be as slack as practically possible, without ever showing any signs of jumping off, provided that the drive is steady, straight, and well-designed.

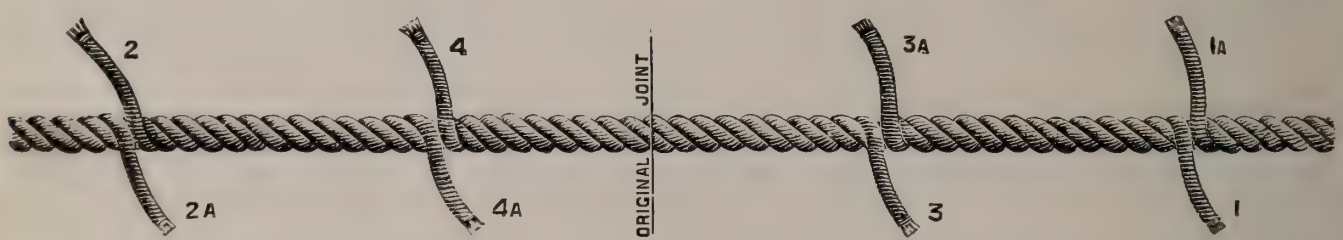


Fig. B.

(2) Ropes being too thick for the grooves.
(3) Ropes being very heavily loaded.
(4) Excessive speed, owing to centrifugal action the ropes have a tendency to fly out of the grooves.
(5) Ropes wedging too much in the grooves and so setting up a plucking action.
(6) What, for want of a better name, I will call harmonic vibration. This appears to have some connection with the speed and weight of the ropes, and the distance between the pulley centres, and I believe it can be cured by altering these factors. Where it is difficult or impossible to remove the causes of ropes bouncing, a wooden grid is sometimes used in order to prevent the ropes leaving the grooves. It is usually placed on the slack side of the drive, for the ropes to run through, a short distance before they reach the driven pulley.

The Best Type of Rope to Use.

In designing a driving rope, the main results a rope-maker strives to obtain are: Low rate of stretch, large surface contact with the sides of the pulley groove, pliability, strength and suitability to take a strong and easily-made splice.

Many types of both three and four-strand ropes are used for transmitting power. The advantages of a three-strand rope are that it can be made slightly more pliable, and is rather stronger than a four-strand rope. But these advantages are more than counter-balanced in the four-strand rope, because, as compared with a three-strand rope, it can be made with a far lower rate of stretch; it has a larger contact surface with the pulley grooves; and is capable of a stronger splice, as two strands are interlocked on each side of the original joint, whilst with a three-strand there are only three interlockings altogether. Besides this, the factor of safety is so high that the slight difference of strength between the two types may be ignored. And as regards pliability, a well-made four-strand rope, Lambeth type, will bend almost as well as a three-strand rope. The only drawback to the four-strand rope is that occasionally they have to be fixed in remote parts of the world where there are no expert driving-rope splicers; these places are rapidly growing fewer, but it is preferable to have a three-strand rope properly spliced, than to have a badly-spliced four-strand rope. This difficulty of getting ropes spliced properly in up-country and remote places is also being more and more evaded by having the ropes spliced endless before they leave this country; they are then ready to be slipped into the grooves of the pulleys. Though this means sometimes lifting a shaft out of its bearings, it is often by far the best plan in the end, as badly-spliced ropes never give satisfaction. When endless ropes are used, it is advisable, where possible, to have either machine or motor on a sliding bed, in order to take up any slack in the ropes.

As Regards Fibre.

Cotton has proved itself to be unquestionably the best. There is still some difference of opinion as to whether American or Egyptian cotton is the best to use; excellent results can be obtained from either, provided the quality of yarn is good. Though a little dearer to buy, Egyptian is generally preferred.

Pully Grooves.

It is impossible to read a paper on rope-driving without making some allusion to the pulley grooves in which the ropes have to work. Very much has been said and written as regards the best shape and angle of groove to use. And although there is now much more uniformity of opinion as to the best shape of groove than was at first the case, yet I think it would prove of great value to both ropemakers and rope users alike, if in future, rope grooves could be standardized. At present each engineer makes what he thinks to be a suitable size and shape for any particular size of rope. And though many are excellent, their ideas are not all alike, and it would be a valuable thing in many ways to have a definite standard to work to. As regards the angle of the groove, possibly 40 degrees is the best for a three-strand rope, and 45 degrees preferable for a four-strand rope. But the difference of a degree or two, one way or another, in the angle between the sides of a groove is a small matter compared with the importance of seeing that the bottom of the groove is narrowed sufficiently. This is to ensure that the given size of rope which has to work in it can never touch the bottom of the groove and so slip. There are engine builders to-day who are turning out grooves for which they

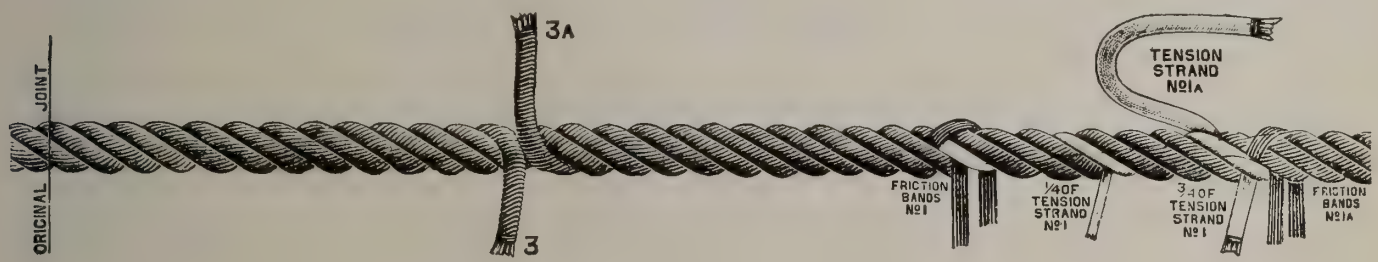


Fig C.

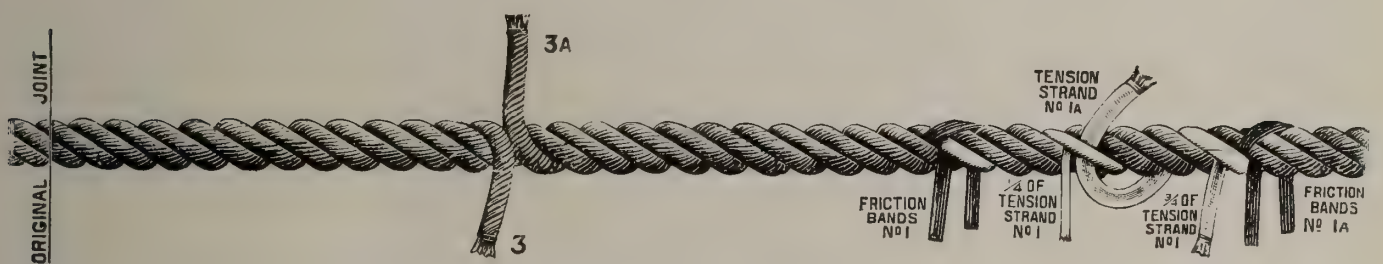


Fig. D

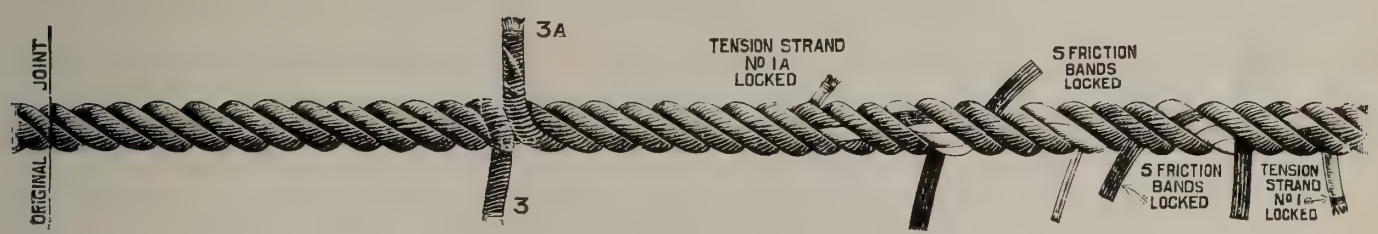


Fig. E.

specify 2¾-in. diameter ropes; but they make them wide enough at the top to comfortably take a rope more than 2 inches in diameter, and the bottoms of the grooves are so round that it is scarcely safe to put 1¾-inch diameter ropes in them. There is nothing to object to in making grooves reasonably wide at the top; this is often a useful feature provided the pulleys are large enough in diameter, as it enables thicker ropes to be used if more power is required. But unless the load is a light one, these round-bottomed grooves are apt to cause difficulties in choosing a suitable diameter of rope, and besides this, they are expensive, as they require thicker ropes than are really necessary for the load to be transmitted. It is not always borne in mind that all ropes reduce slightly in diameter after running a short time.

Revolving Ropes.

The question is sometimes asked, "Why do some ropes revolve in the groove, whilst others do not?" This has never been satisfactorily answered, as on many drives half the ropes revolve and the rest do not. Three-strand ropes have a tendency to wear V-shaped, because their cross-section is somewhat triangular; whilst four-strand ropes tend to wear round in shape, as their cross-section approaches more nearly to a circle. With either three or four-strand ropes, it is reasonable to suppose that by putting them on tightly, they will tend to wedge themselves somewhat in the grooves, and so be induced to wear V-shaped. The fact that ropes revolve or not has very little to do with their longevity, as it is easy to point to both types which have worked well for many years. Some people imagine that when a rope begins to revolve it is rapidly rubbing itself away; this is quite an erroneous view of things. As a matter of experience, the ropes which have the longest ilfe are, in the majority of cases, quite circular in section. And when ropes have been running for any length of time, it is always easier to tighten a round rope which has been worn evenly all over its surface, than to attempt to re-splice a rope which has worn V-shaped, and taken all the wear on its two sides only. Some engineers prefer ropes to revolve, because they affirm that there is less frictional loss whilst leaving the groove with a round rope than with a V-shaped rope maintaining that it partakes more of the nature of roiling friction.

Storing, Stretching, Etc

If it is necessary to store the ropes before fixing, they should be kept in a dry room, not on an earthen floor. When ready for fixing uncoil the ropes left-handed—the opposite to the way the hands of a clock move. Then stretch out with a pair of hand blocks, but do not allow the rope to revolve during this operation, or the "turn" or "twist" will be taken out of it. Everything depends upon the strength of shafting, etc., as to how tight the rope should be stretched, but under ordinary circumstances it is usual to have about four men pulling on a pair of hand blocks. Pass a string around the drive to get the exact running length of rope, and by tying two bands around the rope, mark off the exact running length whilst it is on the stretch, allowing ten feet (five feet each end) for the splice. For ropes 2 inches in diameter, allow 12 feet for splice.

Splicing Ropes (4-Strand).

Unlay the five feet each end that has been allowed for splice, that is, as far back as the bands which mark the running length of rope; it is advisable to tie a string around the end of each of the loose strands to prevent the twist from coming out. The strands are now interlaced together, one from the right-hand side being next to one from left-hand side, and so on, as shown in Fig. A. These strands should be pulled tight so that the bands butt together, and the loose strands one one side tied temporarily around the rope to keep the two ends of the rope in the position they onw are.

Cut one of the bands, say the one on the right, and unlay strand No. 1A, at the same time laying in its place its fellow strand No. 1 from the opposite side of the rope. Do this for about four feet, and tie the two strands temporarily until all are ready for tucking in. The next strand to this, as will be seen in Fig. A, is numbered 2, but do not touch this now; take the next strand but one, numbered 3A, and unlay it, laying in its place strand No. 3, but only for about 1 ft. 6 in.; tie these temporarily. It is very important in splicing four-strand ropes that two strands next to each other should not be laid up in the same direction.

Next cut the other band, and proceed in the same manner with strands No. 2 and No. 4, but of course in the opposite direction. Care should be taken to keep the "turn" or "twist" in the strands, and they should be laid well and evenly down in their places. The splice should now be as Fig. B.

Begin now at joint No. 1 and IA; untie the temporary fastening and shorten the strands to equal lengths of about 1 ft. 6 in. An examination of the strands will show that the outside layer is composed of ten threads; for reference we wil lcall these the friction bands; the internal portion of the strand we will call the tension strand. Take No. 1A and remove from it the ten friction bands and divide them into two lots of five, but do not cut them off. Now take strand No. 1 and unlay it two turns or laps, and whilst it is there remove from it the ten friction bands, divide them into two lots of five, but do not cut off. Now lay in again the tension strand only of No. 1 one turn, and reduce it by leaving out about one quarter, lay up the remaining three-quarters one turn, thus bringing it up to tension strand of No. 1A; tie the two with an overhand knot. At this knot the rope should be about its original diameter, and the joint should appear as shown in Fig. C.

Take tension strand 1A and with the splicing-pin work it under and over tension strand No 1, as shown at Fig. D, passing it under and over spirally about five times; it will then have reached friction bands No. 1. Now reduce it by cutting out a portion, and pass the remainder between the two lots of five friction bands; and lock by passing once or twice through the centre of the rope. This is clearly shown at Fig. E. Five friction bands are also locked through the rope as shown. This complete, turn to three-quarters of tension strand No. 1, this is locked exactly as tension strand No. 1A, five of the friction bands are also locked, as previously shown, and the splice should now be as Fig. E.

All loose ends are cut off, and this portion is complete. Treat the two other joints in the same way, and the splice is complete.

With a three-strand rope one strand is run to the right, another to the left, the third strand remaining with its fellow strand at the butt point; then follow the same process of tucking in as with a four-strand rope.

PRACTICAL TEST OF EXPERIMENTAL PAPER

Newsprint Made from Pulps of Spruce, Hemlock, Balsam Fir and other Woods Run Successfully over Presses of St. Louis "Republic" —Value of Spruce Substitutes Fully Demonstrated

REVIEW OF LABORATORY EXPERIMENTS AND PRESSROOOM WORK

Howard F. Weiss, Director of the Forest Products Laboratory of the United States Department of Agriculture, has published the following notes in "Paper" on tests conducted by the Forest Service at St. Louis. As is well known to paper manufacturers, the United States Forest Service maintains laboratories at Madison and Wausau, Wis., for experimenting, among other things, on the utilization of pulp and paper. For the past two years there have been ground at the Wausau laboratory a number of woods to determine whether or not they would be suitable for the production of newsprint paper. This work has been under the immediate direction of J. H. Thickens, engineer in charge of the laboratory.

From the large number of experimental pulps and papers which were thus made the director of the laboratory selected a few of the most promising for manufacture into pulp, which was later converted into paper at the mills of the Nekoosa-Edwards Paper Company, Port Edwards, Wis. The papers thus made were shipped to St. Louis, Mo., and through the courtesy of the St. Louis Republic run over the presses of that newspaper. Mr. Weiss assigned two of his staff, who are on duty at the Wausau branch laboratory, to oversee the experimental runs in the Republic's pressroom, and they were present both nights the paper was used, making close observations as the trials progressed. It should probably be added, perhaps, that the presses on which the paper was run were operated at a speed of 11,500 revolutions of the printing cylinders per hour, producing about 23,000 complete papers each hour.

Although the operation of the Wisconsin laboratory of the Forest Service has been repeatedly described it may not be amiss to review here the laboratory's procedure and the results of the experiments recently concluded in the pressroom of the St. Louis Republic.

The laboratory was established about three years ago, for the purpose of securing substitutes for spruce in the mechanical pulp process. It was equipped with standard machines, a single unit of each kind. Arrangements were made whereby accurate determinations of power consumption, speed, pressure of grinding, etc., could be obtained.

A study was first made of the grinding of spruce, to find out definitely the effect on the quality and quantity of pulp produced by varying certain grinding conditions such as pressure, speed, surface of stone, temperature, etc. As a result of these experiments certain facts were noted, bearing upon the efficiency of grinding spruce, which are also applicable to the grinding of substitutes. As a result of the tests on spruce, substitute woods can now be studied much more intelligently and thoroughly.

The study of substitute woods was then undertaken, the following species being tested:

Western hemlock Sitka spruce Lodgepole pine Red fir	Pacific Coast
Western yellow pine Western larch Lodgepole pine	Rocky Mountains
Hemlock Tamarack Balsam Jackpine White birch Poplar	Lake States

All these woods occur in large quantities in the sections from which they were secured, and in every case they are found in the vicinity of streams, capable of development for power purposes. Many of these woods, in fact, all of those from the Western part of the United States, occur in very large quantities in the National Forests, and it is the hope of the Forest Service that they will be utilized in the future in the production of pulp and paper.

The experiments on these woods at the laboratory were conducted approximately in the following manner: A number of test runs were made until satisfactory operating conditions were found, the speed, pressure, and surface of stone being adjusted to secure the best results. A large quantity of ground wood pulp was then manufactured from each wood or combination of the woods under test and this was shipped to paper mills in the vicinity of Wausau. The ground wood pulps in each case were mixed with 25 per cent. of hemlock quick-cooked sulphite, and were then run into newsprint paper under ordinary commercial manufacturing conditions.

As a result of the experimental work done on the different species, papers of the following fibre composition were made at the mill at Port Edwards:

Stock No. 1.

White spruce ground wood	75.0
Hemlock sulphite	25.0

Stock No. 2.

Western hemlock ground wood	75.0
Hemlock sulphite	25.0

Stock No. 3.

Sitka spruce ground wood	75.0
Hemlock sulphite	25.0

Stock No. 4.

Montana lodgepole ground wood	75.0
Hemlock sulphite	25.0

Stock No. 5.

Western yellow pine ground wood	75.0
Hemlock sulphite	25.0

Stock No. 6.

Balsam fir ground wood	75.0
Hemlock sulphite	25.0

Stock No. 7.

Cal. lodgepole pine ground wood	75.0
Hemlock sulphite	25.0

Stock No. 8.

Red fir ground wood	75.0
Hemlock sulphite	25.0

Stock No. 9.

Spruce ground wood	37.5
Hemlock ground wood	37.5
Hemlock sulphite	25.0

Stock No. 10.

Balsam fir ground wood	37.5
White spruce ground wood	37.5
Hemlock sulphite	25.0

Stock No. 11.

Tamarack ground wood	75.0
Hemlock sulphite	25.0

Stock No. 12.

Hemlock ground wood	37.5
White spruce ground wood	37.5
Hemlock sulphite	25.0

Rolls of these different papers were then sent to the St. Louis Republic, where they were printed under ordinary conditions on April 29 and 30, practically two entire city editions being gotten out. The tests at St. Louis were very interesting ones, particularly on account of being so satisfactory. The papers ran very well for the most part, and aside from poor color, there were no imperfections which could not be corrected.

The following is a statement by Mr. Knapp of the St. Louis Republic, regarding the tests which were made. The color, while bad in many instances, will undoubtedly be greatly improved in the future:

The Wausau laboratory had as its main purpose the conducting of experiments to find woods that would serve as substitutes for spruce, and it was the product of this investigation that was given a practical test on the Republic's presses. The paper was used to print a part of the issue of the Republic on both Tuesday, April 29, and Wednesday, April 30, these trial runs being the first and only efforts so far made to use the experimental paper in a commercial way. The Republic volunteered to co-operate with the Government laboratory and is gratified that it can report the paper used was of a quality to justify hopeful anticipation that substitute woods can be used which will serve to hold a good part of the papermaking industry on American soil.

As already remarked, the experimental runs developed results that were quite distinctly encouraging. These, however, cannot be appraised with any measure of exactness for several reasons. First of these was the fact that there was not enough of any one particular make of paper to enable the pressmen in charge of the Republic's presses to acquire the familiarity that tends to good results. Sixteen rolls were sent for trial, and in only three instances were there as many as two rolls of the same particular composition. To make this handicap greater, it was necessary to constantly run two rolls of wholly different component materials at the same time, so that the press data were inevitably mixed and breaks in the running could not be traced with the same satisfactory certainty that would have followed if only one kind of paper at a time had been running on a press. The weight of the paper was, also, extremely variable, and the tension set for a roll running heavy would, of course, have to be set differently for another roll running much lighter in weight. Despite these handicaps the demonstration was notably satisfactory in respect to running strength in more than one instance.

The conventional standard of the paper mills, in the matter of weight, is thirty-two pounds for 500 sheets measuring 24×36 in size, yet one roll of the experimental paper which weighed only 26.74 pounds had but one break. This particular paper was made from balsam fir and was of unmistakably good quality apart from its quite surprising strength. Another roll of the same composition ran without a single break and the trials apparently gave conclusive proof that balsam fir is good papermaking material. The red fir paper also showed good results, but the weight being 33.22 pounds, the demonstration was not quite so conclusive.

Taking all factors into consideration, strength, color, and finish, the paper made from balsam and spruce ground wood in equal proportions, roll No. 10, stock number, was the most completely satisfactory. This paper weighed only 29.24 pounds, and the five breaks that occurred in running it were attributed entirely to improper winding. The paper made from white spruce ground wood showed unexpected lack of strength, speaking relatively, but as might be assumed, was comparatively good in color. The matter of color is the point on which the most serious criticism can be made, but there is good reason for believing that this fault can be remedied. Consumers of paper always count on more or less difficulty at the start in getting the color established at a satisfactory standard, so this experimental paper cannot be fairly condemned on that ground.

But one kind of chemical pulp was used in the manufacture of these rolls, as the list already given indicates. It was hemlock sulphite in every instance. One roll, stock No. 2, was made entirely from hemlock, both ground wood and chemical pulp. This paper was somewhat dark, but it showed good strength. The press report shows five breaks, but they are attributed to winding rather than to the weakness of the paper, notwithstanding it averaged only 29.24 pounds. Paper manufacturers have used hemlock pulp for years, to more or less extent, but usually mixed with spruce, and it has never been ranked in the same class as spruce in the matter of quality. Ground wood made from hemlock has a tendency to develop unfelted fibre that stands up like whiskers on the surface of the paper, but the paper made from the Wausau laboratory pulp was notably free from this particular bad quality.

In Ontario there are five hundred fire rangers required by the Crown Lands Department each summer and the licensed lumber companies engage an additional five hundred over whom the Department appoints supervisors. This year it was resolved to hire only experienced men and consequently many of the students of Toronto University could not qualify. Only such students as already had experience in the northern woods for a summer were engaged and what uesd to be a popular summer revenue has been cut off. According to the regulations this year the ranger must be available for service from May 1st to September 30th, have had previous insight into the work, be able to paddle a canoe, handle an axe, and be physically fit. The pay is $2.50 for seven days in the week. There is no allowance for transportation, although the Department supplies canoes, tents and cooking utensils.

CANADIAN PRESS ASSOCIATION

By our Special Representative.

Over three hundred publishers attended the fifty-fifth annual meeting of the Canadian Press Association in Toronto on June 3rd and 4th, and, after spending two days in business and profitable discussions, fully half of the number took a three-day jaunt by special train through the rich timber and mining districts of Northern Ontario. The visit to Algonquin Park was one of the most delightful events of the trip.

There were several outstanding features of the gathering and one of them was that the representatives of the various sections voluntarily decided to materially advance the membership fees to meet increased expenditure in connection with the appointment of a permanent secretary. That official will devote his full time to the affairs of the Association, conduct printing cost conferences, and organize local associations. Under the former system the total revenue from all sources amounted to $3,402, while, under the revised schedule, there will be contributed $8,644. It is likely that John M. Imrie, who, for the past two years, has been devoting half his time to the secretarial duties, will be engaged to give his full attention to the office.

The matter of advertising formed a live discussion and various means were suggested for elevating certain classes of publicity, principally patent medicine announcements of an inferior class. It was pointed out that several newspapers have already established a system of censorship for this class of advertisements, which, according to the feeling of the delegates, promises to become uniform in the Canadian press.

J. R. Bone, the retiring president of the Association, stated that if higher rates were charged for advertisements the publishers would be in a better position to pay their employees a bigger wage. He said recent returns showed that there were in the Dominion as many clergymen receiving over five thousand a year as there were newspaper editors and yet twice as many men entered the newspaper field as the ministry. The chief difficulty of the newspaper business to-day as a business was low advertising rates. The average rate, per thousand circulation, of the 292 newspapers in the United States, with circulation over fifteen thousand, was $2.33 an inch. In the twenty-one leading papers of Canada the average rate obtained for advertising was $1.84. Mr. Bone emphasized the fact that the time had come in the history of Canadian journalism when the newspapers should receive better returns for advertising space, which was the means of producing good results for the advertiser.

James M. Lynch, President of the International Typographical Union, spoke at several of the sessions. He emphasized the need of publishers taking a deeper personal interest in their apprentices in order to turn out more efficient men and of having clean, sanitary composing rooms, so that the best results might be obtained. Mr. Lynch outlined the policy of the arbitration agreement between the members of the American Newspapers Association and the International Typographical Union in preventing strikes and working to the highest benefit of all parties concerned.

On the closing day of the session it was decided that the Executive proceed with the incorporation of the Canadian Press Association and revise the constitution of the organization. The thanks of the Association will be tendered the Dominion Government for the removal of the twenty per cent. duty on typesetting and type casting machines and matrices, which will mean a large saving to the trade. It was also resolved that the standard price of advertising in weekly newspapers be twenty-five per cent. and thirty-three and a third per cent. extra for isolated position.

The usual discussion took place on the price of news print and several members aired their views on the question of cost and freight rates. Some told what they were paying for news print and it was decided to appoint a committee to investigate the matter of price. J. F. MacKay, of the Toronto Globe, W. M. Southam, of the Ottawa Citizen, and Frank Adams, of the London Advertiser, were chosen as the committee. They will make extended inquiries and report at a later date. This committee will also take up the matter of alleged discrimination in freight rates on the part of Canadian railways, who, it was charged, are unduly favoring shipments of white paper to the other sid of the line, although, in many cases, these shipments had to pass through Canadian cities and yet publishers in latter cities are charged more for transportation than the American consumer of news print. The committee may secure the co-operation of other shippers and come before the Rominion Railway Board with their grievance, if they find that conditions warrant such a step. In the discussion on prices P. D. Ross, editor of the Ottawa Journal, suggested that if the quotations for newsprint were not more equitably adjusted, it might be advisable for the Canadian Press Association to consider the erection and operation of a paper mill of their own.

The banquet tendered the visitors by the City of Toronto was an enjoyable function, attended by three hundred guests, at which Hon. W. J. Hanna, Provincial Secretary, N. W. Rowell, K.C., Principal Maurice Hutton, of Toronto University, Norman Angell, of London, England, and others spoke entertainingly. Mayor Hocken presided.

The officers elected by the Association were: President, Hal. B. Donly, Simcoe Reformer; First Vice-President; W. M. O'Beirne, Stratford Beacon; Second Vice-Pres. W. E. Smallfield, Renfrew Mercury; Treasurer, J. H. Cranston, Toronto Star; Executive—J. F. MacKay, Toronto Globe; W. J. Taylor, Woodstock Sentinel Review; V. E. Morrill, Sherbrooke Record; W. R. Givens, Kingston Standard; J. H. Woods, Calgary Herald.

Wm. Findlay, of the Ottawa Free Press, was elected Chairman of the Daily Section, and J. G. Elliott, of the Kingston Whig, Vice-Chairman. Of the Weekly Section, W. A. Fry, of the Dunnville Chronicle, is Chairman, and L. G. Jackson, of the Newmarket Era, Vice-Chairman. Of the Trade and Class Section, W. G. Rook, of the Canadian Home Journal, Toronto, is Chairman.

Among the most illuminative addresses delivered at the gathering was one by Sir J. S. Willison, editor of the Toronto News, who dealt with the relations between newspapers and political parties. J. T. Clark, of the Toronto Star, spoke on "Should the politics of a newspaper influence its news reports," in which he made a strong plea for fairness and truth in record-

ing all proceedings. A. T. Wilgress, of the Brockville Times, gave some admirable advice on how letters to the editor should be treated.

Many of the members were accompanied by their wives. The latter were taken for an automobile ride around the city and had dinner at the Lambton Golf Club House. The next meeting of the Canadian Press Association will be held in Toronto and the session just closed was regarded as the most profitable and productive of any ever held in the history of the Association.

OTTAWA TRADE NOTES

Special to Pulp and Paper Magazine.

Ottawa, June 14.—Mr. W. H. Lyman, head of the expansion policy of the International Paper Company, in a despatch from New York to a local paper, has denied that the company will build a $10,000,000 pulp and paper plant at Deschenes, Que., five miles from this city. Mr. Lyman's message stated: "There is no truth whatever in the report. Our company will eventually expand into Canada, but there are no immediate plans for such expansion. We do not contemplate erection or acquisition of any plant anywhere in Canada at the present time. The future is full of promise, however, and Ottawa is a good city and when we determine to locate in Canada, it may be near that city."

By the end of 1914 Canada will have a parcels post system in operation, a bill authorizing its establishment having been passed by Parliament just before prorogation. The system has been modeled on that of the United States, but there are radical differences designed to be improvements. A zone system of division of the country will be followed, but instead of specific areas, as across the border, each province, with the exception of the three Maritime Provinces, which will count as one, will be a zone. Within these Dominion rates and zones there will be provincial rates and local zones, while there will also be a 20-mile zone irrespective of provincial boundaries, in which rates will be very low. This latter feature of the system aims to protect the local retailers who will be given, within this area, a much lower rate than big outside stores would have to pay on parcels. Eleven pounds will be the weight limit of parcels and they must not be more than 72 inches in greatest girth.

Pending the settlement of the terms of the United States tariff the movement of pulpwood and other timber by water route around the city has been practically stilled. United States buyers evidently do not want to buy on such long delivery as water movement generally implies. River men say that trade on the Ottawa River and Rideau Canal was never so dull before, not a single American boat having been seen on either and scarcely one vessel of any kind loaded with lumber.

Limits described as containing some of the best pine and pulpwood areas in Quebec province are being offered for sale locally. They total 235 square miles and are situate on the Upper Ottawa River in Block A. They are being sold in two parcels, one 185 square miles and the other 50 in extent.—Mac.

E. H. Wilkinson, paper mill agent, Toronto, left last week on a two months' business trip to the Old Country, sailing from Montreal on the Corsican.

ADOPT RETALIATION AGAINST CANADA IN NEWS PRINT

Washington, June 13.—Amending the section of the Underwood tariff bill which would place on the free list all print paper valued at not more than 2½ cents a pound, the majority members of the Senate Finance Committee to-day voted to incorporate in the bill the provisions of the Canadian Reciprocity Act passed in 1911.

This action would extend the free list to include all print paper valued at not more than four cents a pound on the condition "that no export duty, export license fee or other export charge of any kind whatsoever, or any prohibition or restriction in any way of any kind whatsoever, or any prohibition or restriction in any way of the exportation shall have been imposed upon such paper, board, or wood pulp, or the wood pulp used in the manufacture of such paper or board."

Retaliation for Canada.

Although the word "Canada" is omitted from the amendment adopted by the committee, it would operate against Canada because of that nation's restrictions on exports of wood and chemical pulp. Senator Simmons, Chairman of the Finance Committee, said that other restrictive provisions or countervailing duties aimed against Canada which have been proposed had not yet been acted upon by the majority, and that the matter would be taken up again to-morrow. He added that there might be reconsideration of the action thus far taken.

Under the reciprocity amendment pulpwood or paper could come in free from Canada when it is the product of free lands in Canada, lands unrestricted by export duty or license fee.

Senator Simmons stated he believed the committee could conclude its work by next Wednesday, and that the Democratic caucus could then be called to meet immediately.

Administrative features of the bill which have delayed the work of the committee thus far, Senator Simmons said, would be solved by the committee within a few days, as the sub-committee would complete its work on these features and submit them to the majority members to-morrow. Secretary of the Treasury McAdoo, he stated, had submitted many valuable suggestions, many of which would be accepted.

New York, June 12th, 1913.

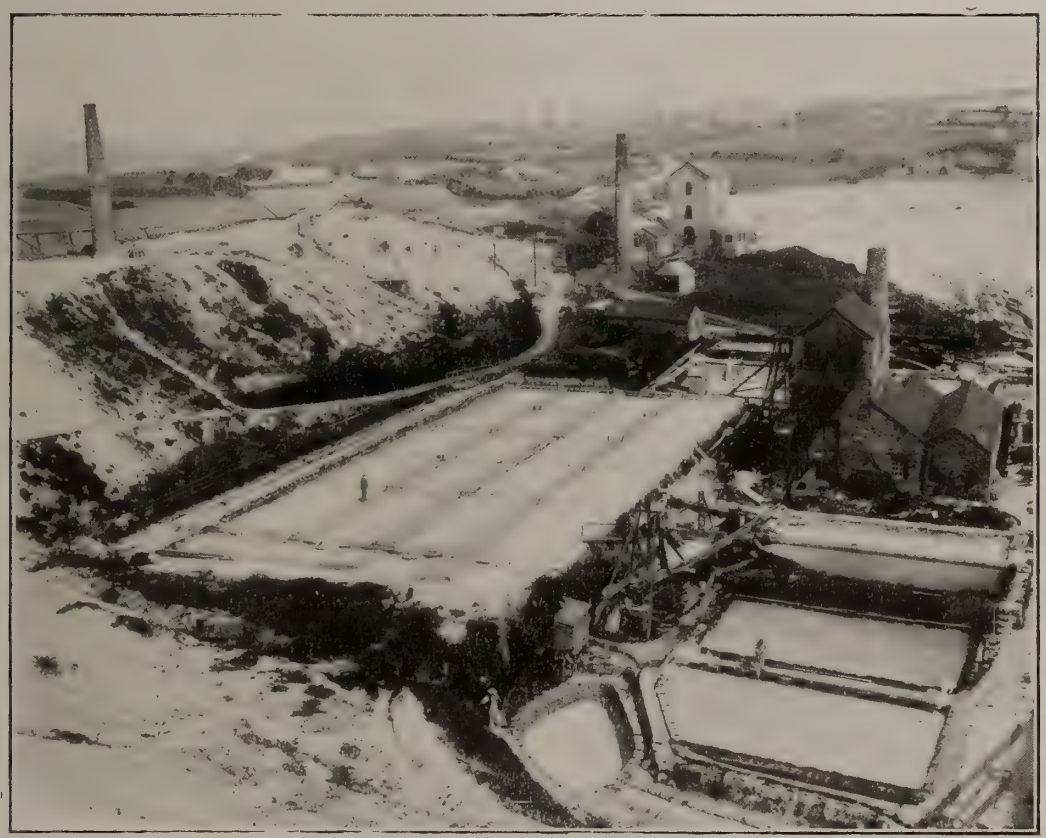
Justice Mayer, of the Criminal Branch of the Federal Court, who overruled demurrers questioning the constitutionality of the Sherman anti-trust law, has received pleas of not guilty from eight more members of the Eastern Box Board Club. Those who entered the pleas were: W. C. Geer, Emmons Bryant, H. L. Paddock, S. A. Short, Jr., C. E. Williams, Louis Newman, W. H. Richardson and Hy. Schleiter. Judge Mayer paroled the defendants in the custody of their counsel.

—Meb.

F. R. Samson, of Windsor Mills, Quebec, purchasing agent for the Canada Paper Company, was married last week. He was presented with a beautiful Queen Anne tea service and other gifts as a mark of appreciation.

THE CORNISH CHINA CLAY TRADE

Cornwall has not only become a county of importance within the British Isles in consequence of its wealth of important industries, but one of its chief products, that of China Clay has attracted a world-wide significance! It has become such a necessary commodity in the manufacture of paper and numerous other industries, that those associated with one or other of the trades in which China Clay forms such an important ingredient, cannot fail to be interested in a brief geological treatise. Kaolin, as it was called, was first used by those ingenious people of China in the manufacture of their own domestic vessels, but those who were better skilled in this crude art, made finer specimens which they exported. The secret of this ancient industry was well kept for many generations, until it was unravelled by some missionaries, who were travelling in the Celestian Empire. The ware took its name from the country of its origin and when the raw material was eventually discovered by William Cookworthy in the St. Austell or Mid-Cornwall District in the year 1755, the original name was still retained. Authoritative geologists declare that pure Kaolin or China Clay is the result of the partial decomposition of granite rock and one of the most remarkable and interesting features is that whereas there are many plastic clays derived from other strata, yet none of these can be employed for which pure clay or Kaolin is most essential, nor in any case can they be used as substitutes. Such clays are, however, used in large quantities for the manufacture of earthenware pipes, floor-tiles and coarser kinds of pottery. Kaolin is derived from the feldspar, one of the principal constituents of granite, and through the operation of aqueous and atmospheric agencies probably aided by volcanic influences the granite dis-integrates and the feldspar becomes decomposed, and thus the substance called Kaolin is originated. When it is considered that only two generations ago, less than 1,000 tons of China Clay were produced in Cornwall and the output last year amounted to considerably over 900,000 tons, one has some conception of the advance made in recent years of this great Cornish industry. Of this vast production about two-thirds is used in the great paper manufactories of the world. Quite an interesting story could well be written on the evolution of the Cornish China Clay trade and its progress, and readers of the "Canadian Pulp and Paper Maker" may now look out for a long series of illustrated articles bearing upon this famous commodity. During the past year one of the most important tours through the County was made by a distinguished representation of all the leading scientific societies of England. The arrangements were effected by a reception committee with Lord St. Leven as President which comprised the prominent public men and also the commercial magnates of the County. After a visit to one of the Cornish Clay works the company were entertained by Viscount Clifden at Lanhydrock, one of Cornwall's principal demesnes, to luncheon. "Success to the China Clay Industry" was proposed by Mr. W. F. Reid, Past President of the Society of Chemical Industry, "who observed that many of them had seen things that they had often read of, or had seen in pictures, but this could not give them an idea of what a pit was really like. Enormous quantities of clay were got from these pits. He believed there was still a greater use for a considerable quantity of the material, if it only got into right hands. There was no doubt that as they went lower they



General View of the Trethosa China Clay Works at St. Stephens

would find huge deposits and he hoped they would maintain their markets of the world as in the past. The time might come when the Brazilians, if they had sufficient enterprise, might possibly produce China Clay, but what was wanted was commercial enterprise, and that was what had made Cornish China Clay an article of world-wide fame. The Cornish China Clay Companies dealt with an enormous amount of material and he must say that he much admired the economic way in which they did it." The reply was entrusted to Mr. F. Parkyn, who said, "We are only very humble commercial men, we are not scientists, and you in your laboratories can help us considerably by investigation on sand and mica. Our methods have been described by some people who visit our works as primitive, but many clever engineers have come with their modern inventions and have failed. Mr. Parkyn remarked that he had visited clay works in France, Germany, Sweden and Austria, where they were fitted up with magnificent electrical appliances, but those were not making both ends meet. "With all our primitive methods," remarked Mr. Parkyn, "we still hope to be men of business. We are so hurried now that it is virgin clay to-day, and in a month's time it comes on your table as a newspaper. He exhorted all to burn their newspapers after reading them, as clay merchants did not want them to be pulped again, and by so doing would render service to the China Clay industry."



Dorothy China Clay Pit

The common stock of the Spanish River Pulp and Paper Mills dropped a few points on the Toronto Stock Exchange last week. This is attributed to the panicky condition of the market of late in several stocks and, in no way, reflects on the conditions of the company. The plants at Espanola are being operated to capacity and the annual statement, based on the year ending June 20th, will, according to T. H. Watson, Vice-President and General Manager of the Company, prove very satisfactory. The two additional 120 inch paper machines, which have been installed, will be in operation by the end of the present month and will bring the production of news print at Espanola from 110 tons per day to about 165. Six grinders in the ground wood plant of the company at Sturgeon Falls are now in operation and the remaining six will be running by the end of the present month.

UNITED STATES NOTES

Special to Pulp and Paper Magazine.

Under the management of A. E. Clark, the Oakland Paper Company, at Oakland, Cal., has made such rapid growth in the last few years that the old quarters on Broadway, new Ninth Street, became entirely inadequate, much of the stock being stored in nearby buildings. To provide the additional room two stores were recently secured on Broadway, near Sixteenth Street. The new place has just been occupied, and is one of the most attractive paper stores in Oakland.

* * * *

Five out of the six mills at Fulton, N.Y., are down on account of strike. Those which are down are as follows: Victoria Paper Company, manufacturers of tissue; Granby Paper & Pulp Co., manufacturers of lightweight manilas; Volney Paper Company, manufacturers of kraft; North End Paper Company, manufacturers of tissue, and the Oswego Falls Pulp & Paper Company, manufacturers of news and box board. The Eureka Paper Company is the only paper manufacturer which is running full time. The employees at this mill have refused to join the union, saying that they are perfectly satisfied with their working conditions. At all the mills where the employees are on a strike the mills are having a general overhauling so that when ready to start up the mills will be in first-class condition.

* * * *

The Capac Paper Company, of Capac, Mich., is about to make extensive improvements in its plant. The improvements contemplated will mean an outlay of about $100,000, and will take nearly all the early part of the summer to complete. The plant will be closed some time this month and remain so until after the improvements are completed. Two new beaters and two Jordan engines will be installed. To the papermaking machine will be added 32 new dryers, making 73 dryers in all. Two additional cylinders also will be added, making seven on the machine. A variable speed steam engine to drive machine sheet liners, pasting machines and other auxiliary machinery will be put in. All the new machinery is either on the ground ready to be installed or is ready for delivery. Recently two new boilers were added to the plant, giving the company 1,200 horse power.

* * * *

Improvements and enlargements are scheduled for the Wisconsin River Pulp & Paper Co., at Stevens Point, Wis., C. A. Babcock, president. Contracts for the construction of a new pulp mill and other work will be let. Additional machinery will be needed. The new building will be considerably larger than the present one and will be of stone and reinformed concrete. It will be electrically equipped and of sufficient capacity to run all of the machinery. The mill operations will not be interrupted.

* * * *

The Commission has to-day made public a decision arrived at on May 12 and written by Chairman Clark, in Docket No. 5327, Pulp and Paper Manufacturers' Traffic Association, against the Chicago, Milwaukee & St. Paul Railway Co., et al., in which the carload rates on pulp wood from points in Minnesota to points in Wisconsin and Michigan were in issue. The Association includes the companies operating pulp and paper mills located in Wisconsin and Michigan whose annual consumption of pulp wood is approximately 750,000 tons. The mills represented by the complainants are located at Appleton, Ashland, Biron, Combined Locks, Cornell, De Pere, Eau Claire, Grand Rapids, Green Bay, Kaukauna, Kimberly, Ladysmith, Little Rapids, Manasha, Morriss, Mosinee, Neenah, Nekooa, Park Falls, Port Edwards, Rothschold, South Centralia, and Stevens Point, Wis., and Quinnesec, Mich.

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The Port Huron Paper Company, at Port Huron, Mich., is just completing a new building, which is a duplication of the one formerly used for a beater room. The new structure is of modern construction and absolutely fireproof. The company is installing in the structure a new 400 horse power tandem Corliss engine and five new beaters will shortly be added, giving ample beating capacity for another paper machine, which the company intends to install later.

* * * *

The new plant of the Southern Board and Paper Mills at Vernon, Cal., which cost about a quarter of a million dollars, is now complete. The mill was built in about four and a half months, which is considered a new record for rapid construction on a plant of this kind, and the entire plant is running smoothly and in good order. The mill will make box board, specialties and heavy papers. The new mill is controlled by the same interests as the California Paper and Board Mills, of San Francisco and Antioch, Cal.

* * * *

A special to the Lewiston Journal from Rumford states that a good authority is responsible for the report that a new coating mill is an assured fact for Rumford. "The proposed plant will be built conveniently near the Oxford paper mill, according to the plans, and the paper from the Oxford will be utilized in the coating plant."

* * * *

The Crown-Columbia Paper Company began the operation last month of its entire plant at Camas, Wash., by electricity, using current amounting to 5,000 horse power, furnished by the Northwestern Electric Company. The new Fourdrinier machine at this plant, formerly mentioned as the largest in the world, will be put in operation for the first time about the middle of June producing 60 to 65 tons of news daily.

* * * *

The work of installing the machinery in the addition to the plant of the Watervliet Paper Company is nearly completed. The six coating machines are in place, the

super-calenders are being set up and the two reel cutters and two big under-cuts are also in the plant. Delay in the arrival of some of the machinery has prevented the company from starting up the addition as soon as had been hoped, and it will probably be three or four weeks before the coating department is put in operation.

* * * *

The United Boxboard Company, of 200 Fifth Avenue, New York, through its attorneys, appeared before Justice Gerard in Part 1 of the Special Term of the Supreme Court on June 4 and made a motion to correct the judgment that was made in favor of the Trust Company of America. The United alleges that Judge Henrick erred in his decision that the $16,000 of bonds were in the treasury of the United Boxboard & Paper Company, whereas, it is stated that they are owned by the United Boxboard Company.

* * * *

The Zellerbach Paper Company at San Francisco, Cal., has undergone several notable changes in the personnel of the various branches of late. That of most interest is the transfer of Louis A. Colton, who for the last three years has been manager of the Pacific Paper Company of Portland, Ore., to the San Francisco house. Mr. McLean, who has been manager of the company's Oakland branch, will hereafter guide the destinies of the Pacific Paper Company at Portland. He leaves Mr. Ady, who was formerly associated with him as sales manager, to take charge of the Oakland store. Another important change is the departure of A. L. Newman, who will take up important executive duties with the Zellerbach Paper Company, of Los Angeles.

* * * *

The Official Register of Harvard University, Vol. 10, No. 3, Part 6, published by Harvard University, Cambridge, Mass., has been issued, containing thirty-two pages, devoted to the School of Forestry. Attention is called to the fact that hereafter it will be so organized that the first year (a calendar year beginning July 7) will include only general and fundamental courses, and the second year (an academic year, beginning September 22), will be devoted to advanced work to be chosen among four special fields.

* * * *

Every sluice gate between Neenah and Depere, Wis., on the Fox River, was open for a time last week, but the water level as result of unseasonable rains approached the high mark of last spring. Some trouble from back water was experienced by a few of the mills. At Combined Locks, Wis., there was fear for a few days that the water would wash away the bank at one end of the big dam. A leak was discovered, but, fortunately, there had been but little seepage and repairs were still possible.

* * * *

The Bancroft Paper Company's mill at Middlefield, Mass., was destroyed by fire several weeks ago. The fire was discovered about 1 o'clock in the morning, and the flames spread so rapidly that in less than an hour the walls of the mill had fallen. There was no fire apparatus available and nothing could be done to check the flames. The loss will amount to about $30,000, partially insured. The mill was built about 35 years ago by Buckley, Dunton & Co. and John Tracy. Mr. Tracy operated the mill with success until his death about five years ago. The property was later purchased by Coleman & Grossman, of Pittsfield. Mr. Coleman withdrew from the company in 1911 and Alexander Geiger, of New York, and Benjamin Goldstein, of Fall River, entered into the company with Grossman and others. The mill gave employment to about 25 hands.

* * * *

Work is started on a new ground wood mill for the Continental Paper Bag Co. at Watertown, N.Y., to take the place of the old mill which was ruined by the high water this spring, which undermined the walls and caused the building to cave in. The new building will be 45 x 93 feet, one storey in height and will have a capacity of about six grinders. The building will be of reinforced concrete and brick construction. The concrete foundation walls next to the river, where the flume was, will be 12 feet in height and above the foundation there will be brick walls 14 feet in height. Fifteen-inch steel beams will be used to support the roof, which will be of asphalt-slag construction over two-inch plank. It is expected that the mill will be ready for operation by July 15.

* * * *

The new net weight law, which provides that when any commodity is sold in terms of weight or quantity count must be made of how much is sold, became operative on June 1st in the State of New York. The measure requires goods sold in packages to have the net weight plainly marked on the outside. All other commodities not in containers shall be sold by standard weight, standard measure or numerical count, except vegetables.

* * * *

The rainfall during the month of May in the paper-making district, as reported by the American Paper and Pulp Association, amounted to 3.83 inches, against 3.19 inches in April, 4.37 inches in March, 1.81 inches in February, and 3.28 inches in January. The rainfall for May, 1912, was 4.24 inches, and in May, 1911, 2.05. The district from which this general average is obtained is bounded on the north by the Great Lakes and the St. Lawrence Valley; on the east by the Atlantic Ocean; on the south by North Carolina and Tennessee, and on the west by the Mississippi River Valley.

REV. DR. J. A. MACDONALD INJURED AT SOO.

Editor of Toronto Globe Hurt When Stairway Fell in Lake Superior Paper Mill.

Sault Ste. Marie, Ont., June 13.—The Detroit Board of Commerce, comprising a party of 571, arrived at Sault Ste. Marie at 12.45 p.m. on the City of Detroit Third. While visiting the Lake Superior paper mill an accident occurred through the falling of the stairway leading to the slasher room, in which two were seriously and four slightly injured.

Rev. J. A. Macdonald, editor of the Toronto Globe, received the most serious injuries, being rendered unconscious. H. A. Everhardt, president of the Sulphite Pulp and Paper Co., Detroit, also was seriously injured, and W. D. Atkinson, a resident of the Soo.

Those slightly injured were: Eugene Jannisee, Detroit; M. B. Akley, Peninsular Engraving Co., Detroit; J. H. Hunter, Insulator Wire Co., Detroit. The injured were attended by Drs. W. A. Wilson, J. J. Delbridge, Roland H. Stevens, H. J. Dart, and A. W. Blain. About forty people were on the stairs when the crash came.

Dr. Macdonald gave an address in the amphitheatre of the boat last evening en route to the Soo, speaking for an hour and a half on the policy and politics of Canada in relation to the United States. The audience was delighted with the address.

MR. HASTINGS (U. S.) SPEAKS FOR THE PAPER MANUFACTURERS

Special to Pulp and Paper Magazine.

New York, June 12, 1913.

Arthur C. Hastings, president of the American Paper and Pulp Association, 50 Church Street, this city, represented the Association and its members several weeks ago at Washington, D.C., at the hearing of the paper schedule in the proposed new Underwood Tariff Bill. He argued strenuously against the placing of newsprint on the free list. His brief to the subcommittee of the Senate Finance Committee was as follows:

"On behalf of the American manufacturers of newsprint paper of a value of 2½ cents a pound, or under, I desire to make urgent request that your committee do not concur in the recommendation of H. R. 10 (the pending tariff measure) relating to their product, wherein it is provided that the same shall be placed on the free list.

"In making this plea we do not dispose to burden you with a reiteration of the arguments presented at hearings conducted by former sessions of Congress, nor of those submitted to the Ways and Means Committee, when the matter was before it for consideration. We assume, however, that the members of your committee are individually familiar with the statements then made, and respectfully ask that consideration be given to the facts set forth in the printed proceedings of such hearings.

"We are aware of no well-founded reason why the American producer of newsprint paper is not entitled to the same treatment as that afforded to those who are engaged in any other line of legitimate industry in this country, and we are still unwilling to believe that this necessity for and right to fair treatment will be ignored.

"Since the hearings before the Ways and Means Committee on Schedule M, embracing newsprint paper, there has been no material change in conditions which would require a new presentation of the case. The developments in the intervening time have, however, tended more and more to emphasize the injustice of the proposition whereby it is proposed to place newsprint paper on the free list.

"As has been previously pointed out, since the beginning of serious agitation on the part of the publishing interests demanding a reduction of the tariff on newsprint, there has been great discouragement for an increased investment in the industry in this country. Indeed, those who were already engaged in this line of manufacture have been deterred from extending their business, so that it may be conservatively stated that the industry in recent years, so far as its growth is concerned, has been at a standstill.

"The disposition of the Government to make the American market of easier access to the foreign producer has inclined capital to seek its investment in other countries. As a result the development in the paper industry has not been in the United States, but in their competitive countries.

"The Congressional Committee which was appointed to investigate the industry prior to the enactment of the Payne-Aldrich Tariff Law, known as the Mann Committee, made diligent examinations, not only of the many producing plants, but of their books, as well, which were freely opened for their inspection. That committee reported only on newsprint, and it is very well known that it showed no disposition to particularly favor the industry; nevertheless, it reported to Congress that the manufacturers of newsprint were entitled to a duty of $2 a ton, but arbitrarily ignored the great difference in the cost of wood, which would have justified an additional duty of $4 or $5 a ton. A report was likewise made by the Tariff Board after an exhaustive inquiry in which the difference in the cost of manufacturing newsprint in the United States and Canada was fixed at $5.35 a ton in favor of the Canadian mills. There was no investigation made by the Board concerning the cost of production in other countries.

"While the principal competitor in this grade of paper is the Canadian producer, we have also to compete with England, Germany, Sweden and other European countries, and it may be pertinent to remark in this connection that while the recent decision of the Customs Court of Appeals holds that under the favored nation clauses in our treaties, all paper-producing countries that have such treaties with the United States are entitled to bring into the United States free of duty paper which does not exceed 4 cents a pound in value, including all newsprint, it was never the intention of Congress, which passed the Reciprocity Bill, of which Section 2 applies to paper, that our doors should thus be thrown open to all the world. President Taft, indeed, distinctly disclaimed such purpose, though he was heartily in favor of the reciprocity measure.

"When Section 2 was enacted it was supposed the reciprocity measure would be accepted by Canada, and, therefore, on account of the mutual concessions made in the arrangement, there would be no ground for other countries claiming the free entry of paper. However, when the Canadian people rejected that portion of the Act which require concession on their part, and Section 2 was unexpectedly found standing alone, a situation was created that was never contemplated by those in authority.

"The very marked developments in the newsprint industry in other countries within recent months makes it absolutely certain that the importations into the United States on this product will be largely enhanced even under maintenance of a reasonable duty. There will certainly be no lack of supply at a low price; we can, therefore, see no good reason why these importations should not be yielding a reasonable revenue to the Government, while, at the same time, avoiding a measure much needed encouragement to the domestic producers.

"It has been repatdly alleged by those who are eager to procure cheap paper without regard to the source from which it come, that the American mills do not compare in efficiency and modern equipment with mills of certain other countries, and that, therefore, the American paper manufacturer is asking a duty to protect himself against his own lack of progressiveness.

"In answer to that much advertised but erroneous statement it would seem necessary only to refer to the fact ascertained by the Tariff Board that Canada can produce newsprint paper at a cost of $5.35 a ton less

than it can be produced in the United States, and to the other well established fact that the wood required for the production of a ton of paper can be purchased in Canada for about as much less than it can be obtained in the United States as the difference in cost above mentioned. Therefore, if the Canadian and American mill were supplied wood at the same price, there would be practically no difference in the cost of manufacture; and this would not be true if the American mills were less efficient than the Canadian.

"The fact should not be overlooked that in putting newsprint on the free list we are not only withdrawing a proper protection and encouragment from our local industry, but are actually discriminating against it in favor of the foreign producer, in as much as the countries to which we are freely offering our market are at the same time exacting a duty upon every pound of American paper shipped into their market. In this manner the market for the American mill is limited, while that for the foreign producer is expanding.

"We call your attention to the daily production of news printing paper in the United States, which, at present, is about 4,900 tons. The capital invested is $100,000,000. The number of employees is 26,500."—Meb.

CANADIAN GOVERNMENT TAKES ACTION IN DISCRIMINATION CLAUSE

Special to Pulp and Paper Magazine.

Ottawa, Ont., June 10.—The Canadian Government has already been in communication with the British Embassy at Washington relative to the seeming discrimination against Canadian chemical pulp contained in the proposed tariff duty of $2 per ton of the United States as compared with the free entry to the same country of European pulp. It is awaiting advice as to the probable outcome of the measure and its interpretation if it is passed before it takes any action in the nature of retaliatory legislation or brings the matter to the attention of the United States Government. Such was the announcement made by Premier R. L. Borden on the day preceding the closing of the session of Parliament just concluded, practically the only direct reference to pulp and paper questions made during that same sitting.

The matter was brought to the attention of the House by Hon. William Pugsley, former Minister of Public Works, who spoke of it as "a matter of great importance to the people of Canada in this country. I understand," he continued, "that in the tariff legislation now pending before the Congress of the United States, it is proposed to insert a clause which will penalize the pulp manufacturers in most of the provinces of Canada to the extent of two dollars per ton, as against pulp manufacturers in any other country. The clause provides that, in the case of pulp manufactured in any province, in which there is any increased license fee or any restriction against export of either pulp, pulpwood or pulp paper, chemical pulp coming from such province shall be subject to a duty of two dollars a ton; whereas chemical pulp which comes from other countries and which enters so largely into competition with Canadian pulp, is allowed to come into the United States free of duty. As I understand the ground upon which Congress is asked to act in the imposition of the duty, which is especially directed against Canadian pulp, is that certain provinces of Canada place restrictions upon the export of pulpwood. It seems to me that the matter is of so much importance that the Government, if its attention were called to the matter, might feel it to be in the public interest to make representations at Washington which might lead to the abandonment of the proposed legislation. I think it might well be represented to the authorities at Washington that the export of pulpwood from private lands in Canada amounts to at least 1,000,000 cords a year; and it seems to me that it might fairly be urged that the mere fact that some of the provincial governments impose restrictions upon the export of pulpwood ought not to outweigh the advantage which the American pulp and paper manufacturers derive from obtaining this most important supply of raw material.

"**I think it might be fairly represented that in view of the United States manufacturers getting from Canada such a large supply of raw material cut from private lands, in regard to which there is no prohibition of export, the Congress of the United States might very well abandon the idea of imposing what cannot be regarded as otherwise than a penalty against the pulp manufacturers of Canada.** I bring the matter to the attention of the Government in the hope that, by reason of the importance of the subject, they might think it worth while to bring the matter in some way to the attention of the United States authorities. Of course there are several methods open to Canada. One would be to induce the different provincial governments to abandon the restriction which they place on the exportation of pulpwood from Crown lands; another—and this would strike a vital blow at the pulp and paper manufacturers in the United States who get their supply from private lands in Canada—would be to impose an export duty on such material. Pulpwood from Sweden is the great competitor of Canada in the United States and it will enter that country free of duty, whereas pulp from Canada will not."

In reply Premier Borden said: "This matter has engaged the attention of the Government during the past three or four weeks, and communications have been held with the British Embassy at Washington in regard to it. It is not by any means clear that the interpretation the honorable gentleman places upon the proposed enactment would be carried out; the contrary would be the case if the language is interpreted by the Treasury Board of the United States in the way in which precisely similar language has been interpreted in the past. In making that statement I speak from recollection and without the papers before me, but I feel sure I am right. We await advice as to what the probable outcome will be either in respect of the enactment of the measure or as to its interpretation if it should be enacted. Of course the larger question of the adoption of some measure by this Parliament which might tend to equalize matters in case there should prove to be discrimination against Canada is a subject that I would not care to give an opinion upon. Any proceedings by way of compensating legislation such as suggested would have to be very carefully considered and further than that the tariff of the United States, like the tariff of Canada, is a matter in the first place of purely domestic consideration and one upon which we will not presume to offer any suggestions or to make any representations unless there should be a distinct discrimination against this country without attendant circumstances which might seem to justify it. So until we are absolutely sure that the suggested discrimination will ensue it would be unwise to make any pronouncement on the subject in one direction or the other."—Mac.



Wm. Stone, of Stone, Limited, Toronto, has returned from an extended business trip to Europe.

It is probable that a paper and straw board plant will be established in Edmonton which will cost $300,000. James W. Simpson, of Worcester, Mass., is one of the principal promoters of the industry.

Warwick Bros. and Rutter, 401 King Street West, Toronto, are erecting a large addition to their premises, which will give them greatly added capacity for their output of various lines of stationery.

It is rumored that there will be a ground wood mill of about 100 tons capacity established near Roberval, Que. The estimates are being prepared for the erection of this mill by the Jas. Stewart Co., contractors, of New York.

W. K. George, of Toronto, President of the Standard Silver Company and Vice-President of the Sterling Bank, has been appointed a director of the Abitibi Pulp and Paper Company, taking the place of Victor E. Mitchell, K.C., of Montreal.

The Lincoln Paper Mills have moved into their new Toronto quarters at 112 Bay Street, where the manager, T. H. McDermott, and staff have much larger space. The offices have been nicely fitted up and the warehouse accommodation is splendidly arranged.

M. Carroll, superintendent of the Toronto Paper Manufacturing Company, Cornwall, spent a few days in Toronto last week. He states that the work of overhauling the sulphite digesters at the mill and installing bleaching tanks is about completed. The sulphite capacity will be about doubled.

Construction work on the new board factory of the Hinde and Dauch Paper Company, Toronto, has been delayed materially owing to the strike of the structural iron workers. The new 124-inch board machine of the company is expected to arrive early next month and, when the new plant is in operation, all kinds of box board will be made.

The Howell Company, of Toronto, have notified the trade at outside points that they have secured a large and centrally located warehouse on George Street, and are now storing goods for local delivery or for shipment to near-by points. The company will receive, store, sub-divide and ship in accordance with instructions, all except hazardous goods.

In all likelihood the Hough Lithographing Company, of Toronto, will remove to Brampton where they will erect a large new factory. The ratepayers of Brampton will, on June 27th, vote on a by-law to grant a loan to the Hough Company of $15,000 to be repaid in fifteen years in annual instalments with interest at five and one-half per cent. It is believed that the by-law will carry.

Garnet P. Grant, President of the Dominion Bond Company, the Toronto Paper Manufacturing Company, and a large number of other companies, has been signally honored by the Royal Colonial Institute in being elected to a Fellowship. He is one of the few Canadians who have recently received this distinction, which is a tribute to his ability as a financier. Mr. Grant is at present in England for a few weeks.

Rumors are revived of an impending stock issue by the Laurentide Company of $3,000,000 to pay for extensions and for the big new power scheme which the company is carrying out. These rumors are held to be accountable for the decline of the company's stock. When the raising of the new capital was first discussed last summer the attractiveness of the subscription rights, with the possibility of the issue being made at par, carried the stock to 240. Now the market shivers, and wonders where the money is to come from.

The business of the Goulds Pump Company of Canada, Limited, will, on and after July 1st, be carried on under the name of Storey Pump & Equipment Company, Limited. The present offices at Montreal, Que., and Toronto, Ont., and the personnel of the company will not undergo any change whatever. This concern handles a very complete line of pumping machinery, consisting of turbine and centrifugal pumps, triplex power pumps, rotary pumps, steam pumps, hand pumps, and a complete line of contractors' pumps and hydraulic dredging machinery.

News print paper has been put to a new use lately. On May 27th Price Bros. Company, of Kenogami, shipped a car load to Montreal. When the foreman of the Moreau Street yards of the Canadian Northern Railway opened the car at Montreal four days later, he found the body of a man stretched, cold in death, on top of one of the big rolls. The roll was badly torn and the unknown man has actually eaten a quantity of paper in an effort to keep himself alive. The seals of the car were not broken and it was, therefore, evident that the man had crawled in among the paper not thinking that the car would be locked and sealed.

The annual convention of the Associated Ad Clubs of America will be held in Toronto in 1914, which was unanimously selected as the next place of meeting at the great gathering held during the past few days in Baltimore. The Toronto Ad Club, backed by Mayor Hocken, of Toronto, and the civic authorities, sent a large delegation to Baltimore. In the [illegible] parade the members were dressed in kilts and were the feature of a procession two and a half miles long, in which nearly every nationally advertised article was represented by an immense float. The parade was witnessed by thousands of people, and the convention

next year will be the most numerously attended assembly that has ever come to the Queen City.

A New York firm contracted this week for 1,000 tons of Norwegian sulphite for one of Canada's news mills to be used in their paper which is to be shipped to the United States. The duty on all this pulp is remitted so that it practically means the free entry of pulp into Canada, which seriously affects the competition with our home mills. With sulphite entering the United States free, it is expected that this condition will occur and that we will frequently find Norwegian sulphite being taken out by Canadian mills for their paper which is shipped back into the United States.

The Belgo Canadian Pulp & Paper Company, Limited, who recently purchased 500 square miles of timber limits known as the Metabetchouan limits, from Messrs. Sharples, Power & Calvin, for about $500,000, report that they intend to erect a sulphite plant to operate upon the raw material secured from these limits. They will also be erecting a new building alongside of their present plant, to house two more paper machines which they intend to add to their equipment. The purchase of the limits mentioned above has put the company in an excellent position for economical production of pulp and paper. At present, sulphite is the only raw material which they have to buy. When the new sulphite plant is in operation, they will therefore be producing all their own raw materials.

During the month of March, settlers along the line of the Temiskaming & Northern Ontario Railway received nearly $40,000 in payment for wood pulp. This shows an increase of 176 cars of 2,200 cords over the figures for February of this year, and an increase of 5,400 cords over the figures for the month of March for 1912. The Abitibi Pulp & Paper Company who are constructing a mill at Iroquois Falls, expect to be able to secure a considerable portion of their pulpwood from farmers and settlers in the neighborhood, and along the line of the National Transcontinental and the Temiskaming Northern Ontario Railways. The money received from the sale of the pulp wood enables the settlers to buy machinery and otherwise improve the farms. At the same time, the purchase of this pulp wood enables the big pulp companies to conserve their own supply of raw materials.

Pulp wood lands of a total acreage of over 90,000, including rights to cut and other assets totalling $118,605.38, are being offered for tender until July 2 by the Northern Islands Pulp Wood Co., Limited, at Port Arthur, Ont., which has made an assignment. The assets include the following: Real estate in Port Arthur, valued at $12,000; pulp wood lands in Lyon Township, Thunder Bay District, totalling 14,909 acres, estimated to contain 25,000 cords of wood and with buildings valued at $7,050, as well as river and road expenditures of $14,056; saw mill, valued at $5,184,55; machinery and equipment, valued at $22,747.81; camp equipment, valued at $10,250.00, and horses at $5,630; camp supplies, valued at $5,394; pulp wood and piling at $2,468; launches, motor boats, boom stocks and chains, $11,[illegible]35; a tug at $18,419.33, and another at $3,503.51; lands in Nipigon and Lyons Township of 67,080 acres; right to cut on lands in Black Bay, Lake Superior, [illegible]20 acres; equity in agreement to purchase Black Sturgeon lands, 8,000 acres, against which is a debt of $52,000. It is expected there will be a number of United States tenderers for the pulp wood lands.

CANADA'S UNITED STATES TRADE

Special to Pulp and Paper Magazine.

Washington, D.C., June 12th, 1913.

The advance sheets from the monthly summary of commerce and finance, prepared by the Department of Commerce and Labor, has just been issued. It shows that during the month of April, 1913, 33,932,900 lbs. of printing paper were brought into this country, valued at $669,095, as against 10,480,900 lbs., valued at $223,062 imported in April a year ago. Of this amount the Dominion of Canada furnished, free of duty, 26,391,477 lbs., valued at $508,617 in 1913, and 7,987,285 lbs., valued at $155,609 in 1912.

During the same period there were 20,558,853 lbs. of mechanically ground wood pulp valued at $167,387, imported, against 23,456,422 lbs. in April, 1912, valued at $190,645. Canada respectively furnished 20,701,832 lbs., valued at $166,927, and 16,914,135 lbs., valued at $149,893.

The imports of unbleached sulphite during April amounted to 41,573,836 lbs., valued at $687,947, which is compared with 33,442,393 lbs. imported during the corresponding period in 1912, valued at $499,281. Canada's share of these imports was 5,064,144 lbs., valued at $88,575 free of duty, and 6,273,700 lbs., valued at $117,464 dutiable. The greater part of this item, from a single country, came direct from Sweden, whose share amounted to 14,737,182 lbs., valued at $223,881.

Chemical bleached sulphite was imported into this country during April to the extent of 14,501,759 lbs, valued at $334,354, while in April, 1912, there were only 12,683,960 lbs. imported, valued at $248,955. Of this amount Canada shipped free of duty 829,343 lbs., valued at 22,384, in April 1913, and 1,111,611 lbs., valued at $30,449, in April, 1912.—Meb.

AMERICAN PAPER FIGURES FOR APRIL

Special to Pulp and Paper Magazine.

New York, N.Y., June 12th, 1913.

The American Paper & Pulp Association reports that during the month of April, 103,856 tons of newsprint were manufactured by its members. In March there were 98,169 tons made, in February 94,786 tons, and in January, 109,664 tons were made. The April output was 95 per cent. of the normal. Shipments amounted to 109,375 tons in April, 100,148 tons in March, 95,664 tons in February, and 110,584 tons in January. At the end of April the surplus stocks on hand amounted to 30,341 tons, end of March 35,824 tons, end of February, 37,834 tons, and end of January 38,674 tons.

The normal output of all grades of paper for the month of April is 361,166 tons. Of this amount 330,161 tons were actually made, an outturn of 12,705 tons per working day, the actual output being 91 per cent. of the normal. During April machines were operated 53 hours below normal.

Shipments during this period amounted to 332,528 tons, which decreased the stocks on hand at the end of the month 1,127 tons, giving a total of 145,108 tons.—Meb.



CANADIAN MARKETS.

Conditions in the pulp and paper market have not changed materially during the past couple of weeks. News print mills are all busy and report that prices are firm. Book and writing plants are well employed, but are not rushed with present orders. The wrapping paper situation is rather dull and it may not pick up again for a while. Quotations are fairly well maintained. The conditions governing paper bags, kraft, and other lines remain unchanged. The market for ground wood is rather quiet, but, it is expected, with the advent of low water on the other side of the line, more wood will be moving in the near future. The sulphite outlook is a little easier. The rag and paper stock market is dull, and there is not much moving in any line at the present time. Thirds and blues and roofing stock are fair. Paper jobbing houses report that the volume of trade during the past month is about equal to last year at this time, but the first four months of 1913 have showed a gratifying gain in volume of business.

Quotations, f.o.b. Toronto, are:

Paper.

News (rolls) $43 to $45, according to quantity.
News (sheet) $50 to $60, according to quantity.
Book papers (carload) No. 3, $4 to $4.35.
Book paper (ton lots) No. 3, 4c to 4½c.
Book paper (carload lots) No. 2, 4½c.
Book papers (ton lots) No. 2, 4½c to 5¼c.
Book papers (carload) No. 1, 5c to 6c.
Book papers (ton lots) No. 1, 5¼c to 6½c.
Writings, 5c. to 7½cc.
Sulphite Bond, 6½c. to 8½c.
Fibre, $3.35 to $3.75.
Manila B., $2.50 to $3.25.
Manila No. 2, $2.75 to $3.50.
Manila No. 1, $3.35 to $3.75.
Kraft, 4c to 5c.

Pulp.

Ground wood (at mill), $15 to $16.50.
Ground wood, $22 to $24.50, delivered in United States.
Sulphite (unbleached), $45 to $47, delivered in Canada.
Sulphite (unbleached), $46 to $47, delivered in United States.
Sulphite (bleached), $58 to $60, delivered in Canada.
Sulphite (bleached), $60 to $62, delivered in United States.

Paper Stock.

No. 1 hard shavings, $1.85.
No. 1 soft white shaving, $1.70.
No. 1 Mixed Shavings, 60c.
White blanks, $1.10.
Ordinary Ledger Stock, $1.20.
Heavy Ledger Stock, $1.50.
No. 1 book stock, 85c.
No. 2 book stock, 55c.
No. 1 manilla envelope cuttings, $1.20.
No. 1 print manilas, 70c.
Folded news, 47½c.
Over issues, 55c.
No. 1 clean mixed paper, 30c to 32½c.
Old white cotton, $2.50 to $2.75.
Thirds and blues, $1.75.
No. 1 white shirt cuttings, $5.
Blue overall cuttings, $3.50 to $3.62½.
Black overall cuttings, $1.65 to $1.75.
Black linings, $1.65 to $1.75.
New light flannelettes, $5.00.
Ordinary satinets, 90c.
Floc. satinets, 95c.

THE BRITISH MARKETS.

Special to Pulp and Paper Magazine.

London, June 3, 1913.

In view of the increased railway rates and the price of sulphite, the British papermakers have resolved to look for an advance in the prices of their products. They are at present enjoying a busy time, mills running at full capacity, and the demand is reported to be good on the export as well as the home market.

* * * *

Mechanical pulp is unchanged in price and business dull. Heavy shipments on contract are arriving from Norway and Canada. Prices are about as follows:

Pine, 50 per cent. moist, unwrapped (prompt)	$10.20 to $10.50
Pine, dry (prompt)	22.30 to 22.80

About $1 extra is charged for forward delivery.

* * * *

The chemical pulp market remains firm and some enquiries are reported. Sellers are holding out for high prices, which are not acceptable at present to buyers. Prices are about as follows:

Bleached sulphite	$55.30 to $57.00
Easy bleaching sulphite (No. 1 quality)	48.00 to 49.00
"News" or strong quality sulphite	38.40 to 47.00
Soda unbleached (No. 1 quality)	38.00 to 38.50
Soda, unbleached (strong quality)	39.00 to 39.50
Soda Kraft	39.20 to 39.50

* * * *

In the Esparto trade enquiries are numerous for distant contracts and a good deal of business is passing. The rag trade is also brisk, but there is a scarcity in most grades and prices are high—too high in fact for paper makers to think of doing business at the moment.

* * * *

In the chemical trade, business is fair, but so far prices are unchanged. The demand for Bleaching Powder at $24.60 is good, and the same may be said of ammonia alkali at $18.30 for 58 per cent., Caustic Soda at $48.30 for 77 per cent., and Saltcake at $10.20.

The railway rates have also affected the prices of China Clay and those who are not under contract are asked to pay 12 cents to 24 cents a ton extra. Prices of papermakers' plaster, fillings and loadings are going up at the same rate.

LONDON CHEMICAL PULP SITUATION.

Special to Pulp and Paper Magazine.

New York, N.Y., June 12, 1913.

A prominent local pulp importer is just in receipt of the following report from his correspondent in London on the chemical pulp situation:

"In regard to chemical pulp generally, the impression is gaining ground in England that the European chemical pulp manufacturers may have rather over-reached themselves. Numerous requests are being received, particularly in Sweden, for the holding back of deliveries of pulp ordered for the United States, and it is stated that American paper-makers at the present moment are not at all anxious to place orders for pulp in Scandinavia, during the uncertainty as to what the tariff changes may bring about. It has been no secret that for six months past the Scandinavian cellulose producers have had very inflated ideas regarding prices, and it is also known that there have been serious differences between the Swedish pulp mills and certain agents in England on this subject, as the pulp mills have declined to take prices which the agents have considered good. It now appears quite certain that the extremely high prices which have been predicted for 1914 will not be realized. One well-informed correspondent whose sources of information are quite distinct from my own, says: "Chemical wood pulp conditions are unchanged and firm. Business is not great, owing to the divergent ideas prevailing amongst buyers and sellers in regard to prices.' The editor of a Swedish journal adds that in Sweden it is believed that many paper-makers in England and on the Continent of Europe have not covered their requirements for sulphite for this year or next, hence the attitude of the mills with chemical pulps to sell. So far as I can learn, the output of chemical pulp in Europe is fairly keeping pace with requirements, and nothing sensational appears likely to happen. The partial suspension of deliveries to the United States has made the market a little easier in England and Scotland, but there has been no appreciable alteration in current prices. An important case has recently been decided, which has settled a contentious point in regard to the reading of the contract note as approved by the Scandinavian and British Associations. It turned on Clause 6 of the contract note of the British Wood Pulp Association (See Note A below). The pulp mills argued that where the buyers refuse to take delivery of pulp during the currency of the contract, the goods could not afterwards be claimed. The arbitrator ruled in favor of the buyer, with costs and damages, and said there must be proper tender of the goods and subsequent refusal to take delivery before Clause 6 can be put into operation. As a number of American firms are now asking for deliveries to be suspended, possibly this point may have added importance." Prices of chemical wood pulps at British ports to-day, c.i.f. are:

Sulphite, bleached	£11 10 0 to £12 15 0
Sulphite, easy bleaching, 1st quality	9 5 0 to 9 12 6
Sulphite, "news" or strong quality	8 15 0 to 9 0 0
Soda, unbleached, 1st quality	8 10 0 to 8 15 0
Soda, unbleached, strong	8 2 6 to 8 10 0
Soda, Kraft	8 2 6 to 8 10 0

Long Ton.	Short Ton.
$56.06 to $62.16	$50.05 to $55.50
45.09 to 46.92	40.26 to 41.89
42.66 to 43.88	38.08 to 39.18
41.44 to 42.66	37.00 to 38.08
39.60 to 41.44	35.36 to 37.00
39.60 to 41.44	35.36 to 37.00

Note A. Clause 6, referred to above, reads:

"(6) Breach of Contract—Should the buyers refuse to take delivery of pulp during the currency of this contract, excepting for reasons covered by Clauses 4 and 5, the goods cannot afterwards be claimed, but may be sold by the sellers, after 14 days' notice, for the buyers' account. On the other hand, failure of the sellers to make delivery entitles the buyers, after 14 days' notice, to purchase against them. Each delivery under this contract to be treated as a separate contract, and failure to give or take any delivery shall not void the contract as to other deliveries."—

NEW YORK MARKETS.

Special to Pulp and Paper Magazine.

New York, N. Y., June 12, 1913.

The ground wood pulp market is beginning to show signs of animation, and prices are stiffening perceptibly. While rains through the northern part of New York State during the past couple of weeks have brought the river up, it was only temporary as they are subsiding again, and production now is only about 75 per cent. of capacity. Though movement is chiefly against outstanding contracts, quite a few paper mills have entered the market during the past ten days seeking supplies to tide them over the summer months. Makers of pulp for sale are adverse to booking orders for deliveries in August and September at present prices, and are not seeking business except for spot deliveries. The supplies of pulp on hand at the paper mills are gradually diminishing and it is anticipated that the shortage will be much earlier this summer than heretofore. The pulp mills in view of this, and with their heavy supplies on hand, are keeping prices on a very firm basis.

As far as sulphites are concerned, the market on bleached continues to reflect a very strong tone, both for domestic and foreign brands. Local importers claim that their houses are all filled with orders over the remainder of this year, and the greater part of next year, and are now booking into 1915.

In general the local old waste paper market reflects a mid-summer appearance, as far as the lower grades are concerned. Due chiefly to the curtailment of several of the principal board mills and the slow business prevailing in that part of the industry, Commons are very weak and packers in order to move stocks are making concessions. The better grades, however, are being firmly maintained. Heavy supplies are coming in from the printers and bookbinders, who are quite active at present, but movement is sufficiently large to prevent accumulations. Under these conditions, prices are ruling exceptionally firm.

(Continued on page 60.)

TENDERS FOR PULPWOOD LIMIT

TENDERS will be received by the undersigned up to and including Friday, the 15th day of August next, for the right to cut pulpwood on a certain area tributary to the Lake of the Woods, in the District of Kenora.

Tenderers shall state the amount they are prepared to pay as bonus in addition to dues of 40c. per cord for Spruce, and 20c. per cord for other pulpwoods, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a pulp mill on or near the area referred to.

Such tenderer shall be required to erect a mill or mills on or near the territory, or in such place as shall be approved by the Lieutenant-Governor in Council, and to manufacture the wood into paper in the Dominion of Canada.

Parties making tender will be required to deposit with their tender a marked cheque payable to the Hnourable the Treasurer of the Province of Ontario for ten per cent. of the amount of their tender; to be forfeited in the event of their not entering into an agreement to carry out conditions, etc.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

W. H. HEARST,
Minister of Lands, Forests and Mines.

Toronto, Ontario,
May 20th, 1913.

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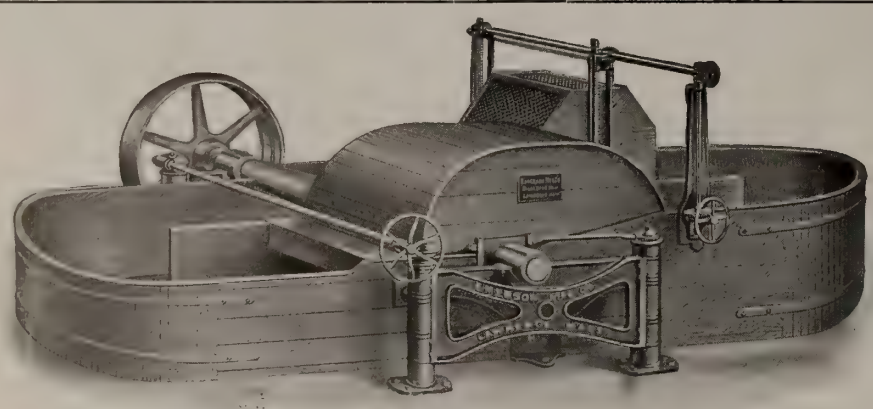
Pulp.

Ground wood, No. 1, $18 to $19 per short ton, f.o.b. mill.
Ground wood, No. 2, $16 to $17 per short ton, f.o.b. mill.
Unbleached sulphite, domestic, 2.15c. to 2.30c. delivered.
Bleached sulphite, domestic, 3c to 3.15c., delivered
Unbleached sulphite, foreign, 2.05c. to 2.30c., ex dock, N.Y.
Bleached sulphite, foreign, 3c. to 3.25c., ex dock, N.Y.
Bleached sulphate, foreign, 2.60c. to 3c., ex dock, N.Y.
Unbleached sulphate, foreign, 1.90c. to 2.10c., ex dock, N.Y.
Soda pulp bleached, domestic, 2.15c. to 2.35c., delivered.
Kraft pulp, foreign, 2c. to 2.20c., ex dock, N.Y.

Paper.

An even quieter market than has thus far prevailed was the general report heard in New York during the past fortnight, though some say the situation is improving. Evidences of this are to be noted almost daily in different quarters, and net results, as a whole are not very discouraging. There is no downing the belief that the demand is going to be more active after the disturbing tariff is settled. No great claims have been made for May's sales, nevertheless local paper houses secured sufficient orders to make a very creditable showing. Several of the larger concerns report business as ahead of last year, while a falling off was announced by others. This goes to show that the continued market irregularity is due more or less to the unsettlement in other lines of the trade. To this may be added the unseasonable weather during the past six weeks. Since the majority of consumers still lack the confidence to buy in advance, because of existing uncertainties, it is not at all surprising to find that orders are averaging small. The dealers in turn are buying only such goods as they have orders for, and regular stocks still remain quite low. In regard to this latter condition, it is the consensus of opinion that it will likely remain unchanged until a more active market prevails. This means that the manufacturers are just about getting sufficient tonnage to continue running. One pleasing feature of the market is the firmness of prices, quotations ranging as follows:

News, rolls, transient business, $2 to $2.10, f.o.b. mill.
News, rolls, contract renewals, $1.95 to $2.05, f.o.b. mill.
News, sheet, $2.10 to $2.15, f.o.b. mill.
Book papers, car lots, C. & S. C., $4 to $4.20, f.o.b. mill.
Book papers, car lots, M.F.S., $3.75 to $3.90, f.o.b. mill.
Writing paper superfine 11c. to 13c., delivered east of the Mississippi River.
Writing paper, extra fine, 10½c., delivered east of the Mississippi River.
Writing paper, No. 1 fine, 9c., delivered east of the Mississippi River.
Writing paper, No. 2 fine, 8c., delivered east of the Mississippi River.
Writing paper, engine sized, 4½c. to 8c., delivered east of the Mississippi River.
Bond paper, 6c. to 24c., delivered east of Mississippi River.
Linen paper, 7c. to 18c., delivered east of Mississippi River.
Ledger paper, 8c. to 30c., delivered east of Mississippi River.
Manila jute, 4¾c. to 5¼c., delivered.
Manila, wood, $2.40 to $2.80, delivered.
Kraft, No. 1, $3.65 to $4.02½, f.o.b. mill.
Kraft, No. 2, $3.27½ to $3.77½, f.o.b. mill.
Screenings, $1.75 to $2.12½, delivered.
Boxboards, news, $30 to $32 per ton, delivered.
Boxboards, chip, $28 to $30 per ton, delivered.
Boxboards, straw, $28 to $29 per ton, delivered.
Wood pulp board, $42.50 to $45 per ton, delivered.
Tissue, white, cylinder, 42½c. to 45c., delivered.
Tissue, fourdrinier, 45c. to 50c., delivered.
Tissue, jute manila, 50c. to 55c., delivered. Meb.



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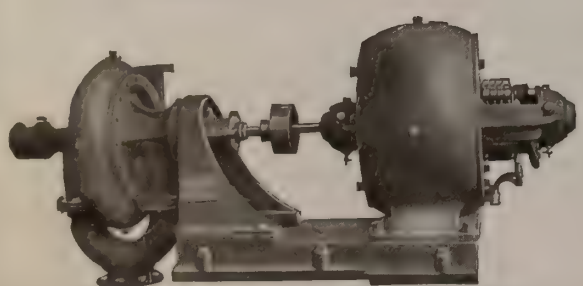
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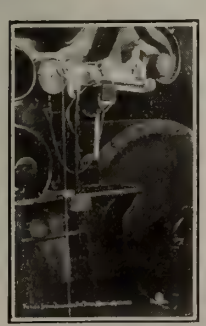
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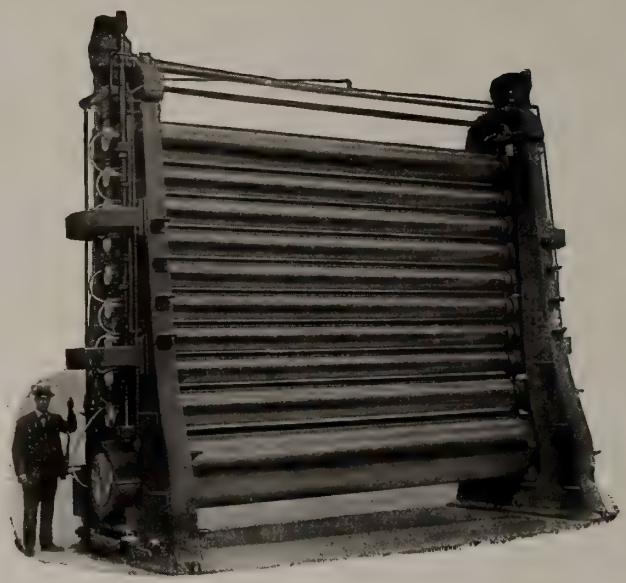
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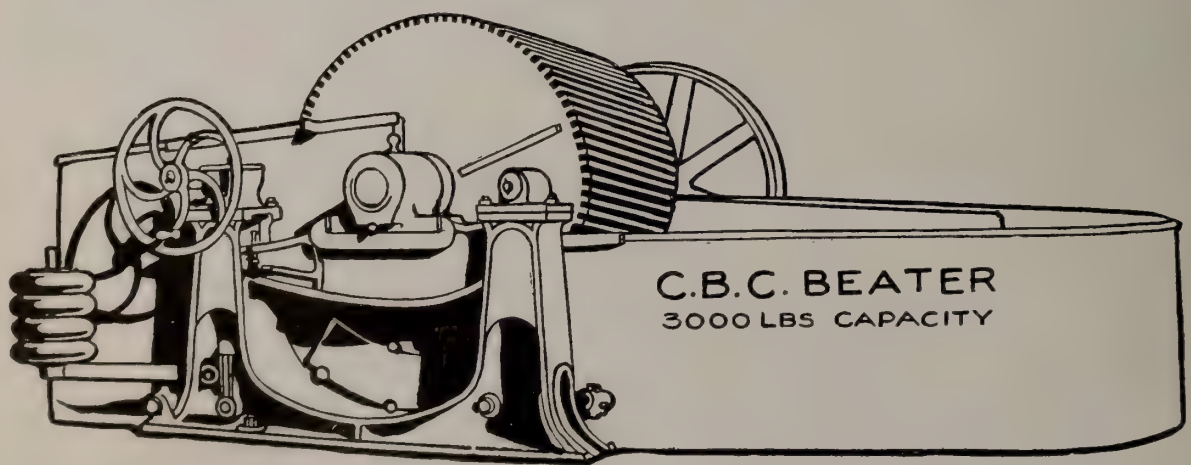
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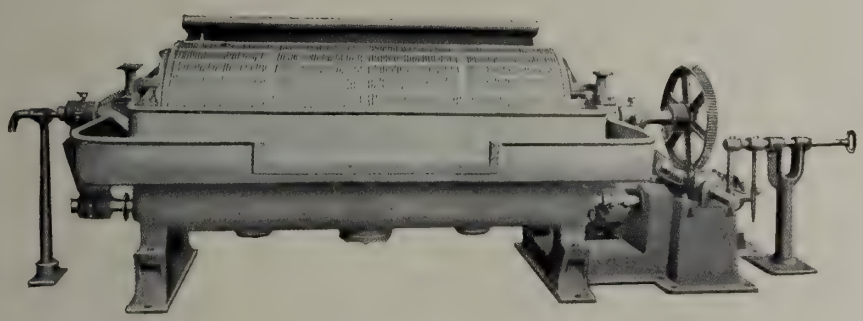
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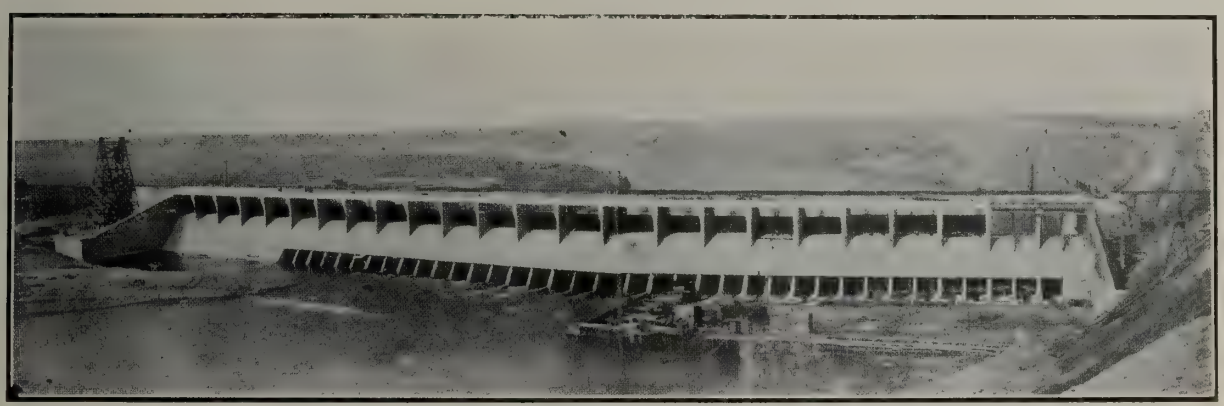
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Carthage Machine Co., Carthage, N.Y.
Canadian Barker Co., Ltd., Sault Ste. Marie, Can.
Green Bay Barker Co., Green Bay, Wis.
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Waterous Engine Works, Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.

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Emerson Mfg. Co., Lawrence, Mass.
Holyoke Mach. Co., Holyoke, Mass.
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Voith, J. M., New York, N.Y.
Waterous Engine Works, Brantford, Can.

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Winn & Holland, Montreal, Can.
Klipstein, A. & Co., Ltd., Montreal, Can.

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McDougall, J., Caledonian Iron Works, Montreal, Can.

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Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier St., Montreal, Can
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

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Klipstein, A. & Co., Montreal, Can.
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Jenckes Machine Co., Sherbrooke, Can.
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Carthage Machine Co., Carthage, N.Y.

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Dillon Machine Co., Lawrence, Mass.
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Siemens Co. of Canada, Ltd., Montreal, Can.

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Voith, J. M., Wurtemberg, Germany.
Waterous Engine Works, Brantford, Can.

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Canadian Boving Co., Ltd., Toronto, Ont.
Jones, E. D. & Co., Pittsfield, Mass.
Process Engineers, Ltd., Montreal, Canada.

Knives
Can. Boving Co., Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.

Jute Cloth
Wardlaw, T. D., Toronto, Ont.

MILL SUPPLIES CONTINUED

Laying Machines
Chambers & Simpson, Toronto.
Collis & Sons, J., London, Eng.

Motors
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Archibald & Brotherhood, Montreal, Can.
Canadian General Electric Co., Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.

Presses
Can. Boomer & Boschert Press Co., Montreal, Can.
Canadian Boving Co., Ltd., Toronto, Ont.
Jenckes Machine Co., Sherbrooke, Can.

Paper and Pulp Dealers
Holyoke Machine Co., Holyoke, Mass.
Atterbury Bros., Nassau St., New York, N.Y.
Mallandain, Albert E., 51 Cheapside, London, E.C., Eng.
Castle, Gottheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Howell Co., Wellington St. E., Toronto, Can.
Parsons Trading Co., 17 Battery Place, New York, N.Y.
Pulp & Paper Trading Co., Temple Court Bldg., New York.

Paper Stock, Etc.
Atterbury Bros., Inc., Nassau St., New York, N.Y.
Christie, J., Co., 5 King St. W., Toronto, Can.
Hough, R., London, England.
Pullan, E., 490 Adelaide St. W., Toronto, Can.
Howell Co., Wellington St. E., Toronto, Can.
Walker, J. R. & Co., 35 Common St., Montreal, Can.

Paper and Pulp Machinery
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd, Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Chambers & Simpson, 152 Bay St., Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Horne, J. H. & Sons Co., Lawrence, Mass.
Jenckes Machine Co., Sherbrooke, Can.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal Can.
Marx, J. & Co., London, E.C., England.
Milne, James & Sons, Edinburgh, Scotland.
Moore & White Co., Philadelphia, Pa.
Perkins, B. F. & Son, Holyoke, Mass.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales, Worcester, Mass
Ryther & Pringle, Carthage, N.Y.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sheldons, Ltd., Galt, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Walmsley, Chas. & Co., Bury, Eng.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
West End Engine Works Co., Edinburgh, Scotland.
Zaremba Co., Buffalo, N.Y.

Paper Machine Tachometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Paper Tester
Ashcroft Mfg. Co., Liberty St., New York, N.Y.

Pipes (Wooden)
National Pipe & Foundry Co., Ltd., Montreal, Can.

Pulp Stones
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Canadian Boving Co., 164 Bay St., Toronto, Can.
Carthage Machine Co., Carthage, N.Y.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Milne, Jas. & Sons, Edinburgh, Scotland.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Perkins, B. F. & Son, Inc., Holyoke, Mass.
Smart-Turner Machine Co., Hamilton, Can.
Voith, J. M., New York, N.Y.

Rags
Walker, J. R. & Co., Montreal, Can.

Recording Gauges
Schaeffer & Budenberg, Brooklyn, N.Y.

Recording Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Refiners
Can. Boving Co., Toronto.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.

Rosin Size
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Save-Alls
Canadian Boving Co., Ltd., Toronto, Ont.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.

Screen Plates
Can. Boving Co., Toronto.

Screens
Can. Boving Co., Toronto.
Glens Falls Machine Works, Glen Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Can.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Tippet Arthur P. & Co., Montreal, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
Wandel Screen Mfg. Co., Walpole, Mass.
Waterous Engine Works, Brantford, Can.
Westbye, P. P., Peterboro, Can.

Shredders—
Ryther & Pringle Co., Carthage, N.Y.

Slitters and Re-Winders
Canadian Boving Co., Ltd., Toronto, Ont.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Steam Regulator—
Pickles, W. F., Buckland, Conn.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Canadian Boving Co., Ltd., Toronto, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Talc
Gillespie, Geo. H., Co., Madoc, Can.

Tanks
Canadian Boving Co., Ltd., Toronto, Ont.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Valley Iron Works, Appleton, Wis.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Canadian Boving Co., Ltd., Toronto, Ont.
Jones & Glassco, Montreal, Can.
Dodge Manufacturing Co., Montreal, Can.

Turbines

Twines
Wardlaw, T. D., Toronto, Ont.
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Jenckes Machine Co., Ltd., Sherbroke, Can.
Smith, S. Morgan Co., York, Pa.

MILL SUPPLIES CONTINUED

Voith, J. M., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels
Allis-Chalmers-Bullock, Ltd., Montreal, Can.
Can. Boving Co., Toronto.
Hamilton, Wm., Co., Ltd., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
McDougall, John, Caledonian Iron Works, Montreal, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines
Chambers & Simpson, Toronto, Can.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Scottish Wire Cloth Co., Ltd., Leith, Scotland.
Tippet Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Waste
Atterbury Bros., Inc., New York, N.Y.
Christie, J. Co., Toronto.
Hough, R., London, England.

Wet Machines
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Can.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works, Ltd., Brantford, Can.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list, of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings, under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish further information.

PULP MILLS

Ground Wood Pulp—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Basin Electric Light & Power Co., Ltd., Montmagny, Que.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Bronson Co., Ltd., Ottawa, Ont.
Clyde River Pulp & Paper Co., Ltd., Liverpool, N.S.
Colonial Wood Products Co., Ltd., Thorold, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Castle, Bottheil & Overton, New York, N.Y.
Chicoutimi Pulp Co., Chicoutimi, Que .
Churchill & Sim, London, England.
Compagnie de Pulpe de Dalmas, Dalmas, Que.
Davy, James, Thorold, Ont.
Dominion Paper Co., Montreal.
Eddy Co., The E. B., Ltd., Hull, Que.
East Canada Power & Pulp Co., Ltd., Nairn Falls, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
La Cie de Metabetchouan, St. Andre, Que.
La Havre Pulp Co., Ltd., Bridgewater, N.S.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Maclaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co. Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Paper & Electric Co., Campbellford, Ont.
Nova Scotia Wood & Pulp Co., Ltd., Mill Village, N.S.
Ocean Falls Co., Ltd., Vancouver, B.C.
Ouiatchouan Falls Paper Co., Ouiatchouan Falls, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Pulp & Paper Trading Co., New York, N.Y.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.
Scandinavian-American Trading Co., New York, N.Y.
Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Espanola, Ont., Sturgeon Falls, Ont., and Toronto, Ont.
St. Croix Lumber Co., Ltd., Halifax, N.S.
St. Croix Paper Co., Ltd., Halifax, N.S.
St. George Pulp and Paper Co., St. George, N.B.
Thorold Pulp Co., Ltd., Thorold, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Trent Valley Paper Mills, Glenmiller, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Quebec and St. Maurice Industrial Co., La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.

Sulphite Fibre—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Dominion Pulp Co., Ltd., Chatham, N.B.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Ltd., Sault Ste. Marie, Ont.
Powell River Paper Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paped Co., Ltd., Montreal, Que.
St. John Pulp & Paper Co., Mispec, N.B.
Spanish River Paper Mills, Ltd., Sturgeon Falls, Ont.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd., Swanson Bay, B.C.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag—
Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., Montreal Que.
Jonquiere Pulp Co., Jonquiere.

Binders' Board—
McArthur, Alex. & Co., Montreal.
Northumberland Paper and Electric Co., Campbellford, Ont.

Blotting—
Canada Paper Co., Montreal, Que., "Velvet Blotting."

Bond and Writing—
Canada Paper Co., Ltd., Montreal, Que., "Burmese Bond", "St. Lawrence Bond", "Canada Bond", "Burmese Linen Ledger", "Windsor Mills Special", "Silverstream," "Springvale", "Super Writing", "White Railway", "Railway Manilla."
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Div.), Thorold
Toronto Paper Mfg. Co., Cornwall, Ont.
Howard Smith Paper Co., Beauharnois, Que.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres to be located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, 1½ cents each.

Railway ties, nine feet long, 1¾ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory,

Deputy Minister.

Department of the Interior, Ottawa,

December 20th, 1912.

PAPER MILLS CONTINUED

Northumberland Paper & Electric Co., Campbellford, Ont.
St. Croix Paper Co., Ltd., Halifax, N.S.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Wrapping—
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Scotch Fibre", "Invictus Fibre", Hercules Manilla", St. Francis Manilla", "Wave Crest Drug."
Crabtree & Sons, Edwin, Crabtree Mills, Que.
Dominion Paper Co., Montreal, Que.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co.

Wall Board—
Beaver Co., Ltd., Ottawa, Ont.
Bishoprick Wallboard Co., Ottawa, Ont.

Bristol—
Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., "King Bristol", "Windsor Bristol", "C. P. S. Tinted Bristol", "Canada Bristol."

Building and Sheathing—
Bird, F. W. & Son, Hamilton, Ont.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Lt., St. Basile, Que.
Montreal Paper Co., St. Basil, Que.
Northumberland Paper and Electric Co., Ltd., Montreal,
Riordon Paper Co., Ltd., Montreal, Que.
St. Croix Paper Co., Ltd., Halifax, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Grand Mere, Que
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard and Specials—
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que., "Victor Printers' Blanks", "Superior Translucent Bristol", "C. P. S. Coated Litho", "Superfine Litho Blanks."
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.

Carpet Lining—
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Wentworth Paper Mills, West Flamboro, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.

Colored—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Canada Paper Co., Montreal, Que., "Canadian Colored Poster."
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Corrugated Paper—
Lazier Paper Mills, Ltd., Belleville.

Cover—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Canada Paper Co., Ltd., Montreal and Toronto, "Tinted Art Cover", "Derby Cover", "Fibrestoc Cover", "Cashmere Cover", "X Cover", "XX Cover."
Eddy Co., The E. B., Ltd., Hull, Que.
St. Lawrence Paper Mills Co., Ltd. (Montrose Division), Thorold, Ont.

Envelope—
Barber Paper & Coating Mills, Ltd., Georgetown, Ont.
Brompton Pulp & Paper Co., East Angus, Que.
Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
St. Lawrence Paper Mills Co., Ltd., Merritton, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Felts—
Bird, F. W. & Sons, Hamilton, Ont.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre—
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Laurentide Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal Que.

Flour Sacks—
Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.

Glazed—
Barber Paper and Coating Mills, Ltd., Georgetown, Ont.

Hanging—
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Strathcona Paper Co., Strathcona, Ont.

Kraft—
Brompton Pulp & Paper Co., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Dryden, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
New Brunswick Pulp & Paper Co., Ltd., Millerton, N.B.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board—
Walker, J. R. & Co., Montreal, Que.

News—
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Don Paper Mills Co., Toronto, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, Joseph & Co., Port Neuf, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Lake Superior Paper Co., Sault Ste. Marie, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal Que.
Miller Bros. Co., Ltd., Glenmiller, Ont.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordan Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing—
Bird, F. W. & Son, Hamilton, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Montreal Paper Co., St. Bazile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board—
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Moira Paper Mills, Belleville, Ont.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag—
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Tissue and Toilet—
Eddy Co. The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Wood and Pulp Board—
Booth, J. R., Ottawa.
Campbell Lumber Co., Weymouth, N.S.
Eddy Co., The E. B., Ltd., Hull, Que.
Gore Paper Mills, Dundas, Ont.
Ford, Joseph & Co., Port Neuf, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.

THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst,

Minister of Lands, Forests and Mines,

Toronto

PAPER MILLS CONTINUED

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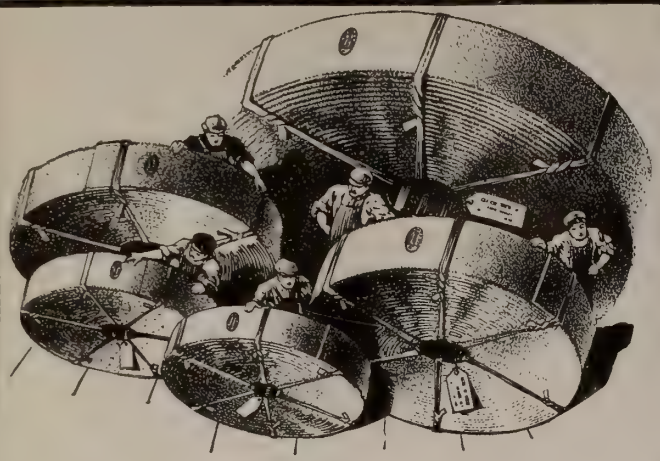
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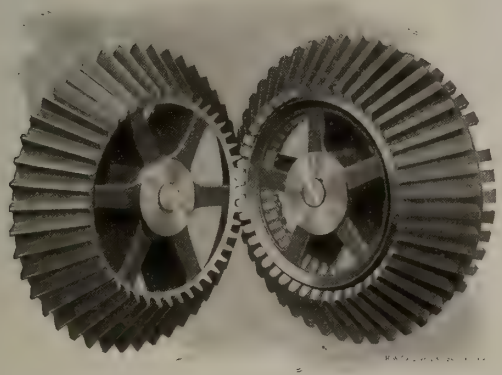
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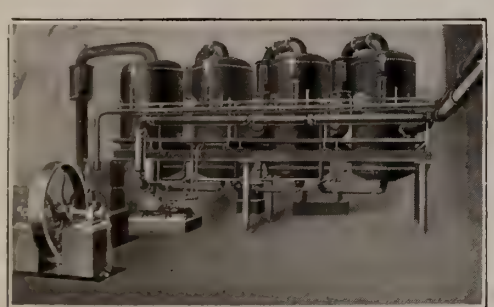
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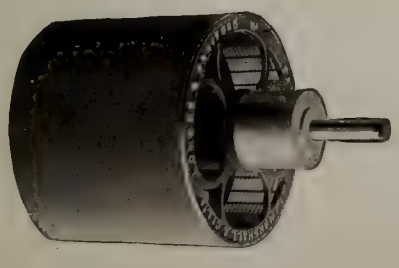
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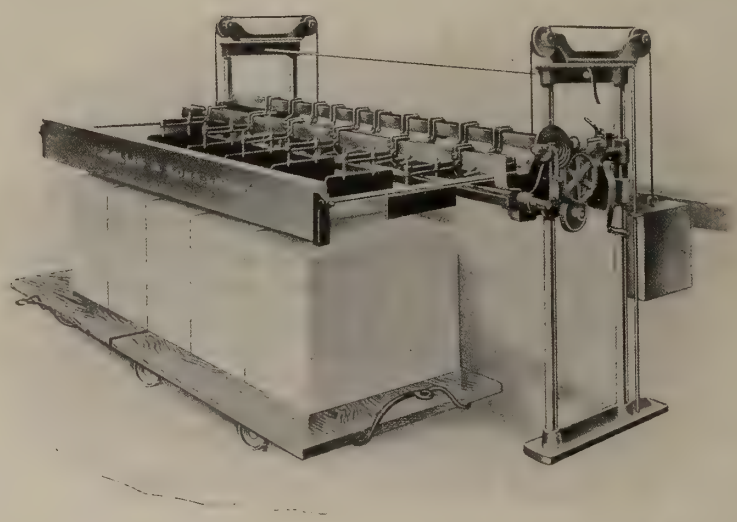
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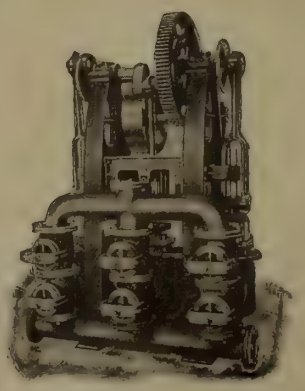
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